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NEWSPAPER

Innovation Marks Efforts To Capture 'Flooded' Data

By E. Drake Lundell Jr.
Of the CW Staff

HARRISBURG, Pa. – "Wash gently with Lestoil, rinse, spin on a tape drive for five minutes, then dry under a hair dryer."

That's the recipe of one DP manager here for cleaning tapes damaged in the recent flooding caused by tropical storm Agnes [CW, July 5]. After that process, he then runs the tapes through a commercial tape cleaner and so far "we haven't lost one bit."

One of many innovative cleanup ideas spawned by the storm, that method seems to be working along with others as DP managers try to capture data originally thought to be totally lost.

Much of their equipment, however, did not seem to fare as well as the tape data, with most machines hit by the flood waters being written off as total losses by their owners, whether they were the computer companies or individual users.

Lost Data Worry

But lost data and not equipment is the worry of most DP managers here because manufacturers replaced most of the damaged equipment within a week or two of the storm.

The card installations still are not sure how much of their records will eventually be recovered from the mud-encrusted cards that were buried when the flood waters roared into computer centers in Florida, Virginia, Maryland, Pennsylvania and New York.

One card site here was beginning to repunch thousands of cards that were water damaged on keypunches set up for it in the local Univac office. Officials of the firm could not say how many of the cards would have to be repunched and how many could be saved by drying but estimated that "most will have to be repunched."

At the Central Management Information Center for the State of Pennsylvania, users were washing and drying more than 18,000 tapes.

"So far all of them have been usable after the cleaning operation," according to manager J. Robert Ippolito.

But the center, which lost an 1108 in the storm, was not taking any chances on how long the damaged tapes would last.

"We're dumping all of the ones that we clean and dry on to new tapes that we ordered specially," Ippolito said, adding: "After one reading we're going to junk the old tapes."

All of the manufacturers reacted swiftly to the flooding by either shipping in totally new systems to the area or making time available to users knocked out by the floods, the users said.

(Continued on Page 2)

Codasyl Ready To Drop Cobol Report Writer

By Don Leavitt
Of the CW Staff

DAYTON, Ohio – Codasyl's Programming Language Committee (PLC) is meeting here this week to consider a proposal to delete the Report Writer facility from the Cobol standard.

The proposal, initiated by the Air Force, calls for the dropping of the RPG-like function because "it is redundant with current features in the language and too complicated for the general report writing needs of the user community."

PLC has already received numerous comments on the proposal, falling into two groups. Users generally want the facility retained; implementors and language purists want it dropped.

(Comments for the committee's consideration should be directed to George Kibler of NCR, host member for this PLC meeting, or to Ronald J. Ham of Honeywell, chairman of PLC, who is at the Ramada Inn Downtown here, a committee source suggested.)

The issue may have already been effectively resolved, even without any action by the committee this week, according to one industry observer. In December, the Report Writer Task Group, which is responsible for maintenance of the facility, was dissolved.

Without an adequate support group to clear up ambiguities in current implementations or to continue development of additional capabilities, the future of Report Writer is already doubtful, the observer noted.

The Air Force proposal was put forth in mid-March and under normal PLC handling might not be considered for some time, but various members of the committee worked to have it considered in order to give the American National Standards Institute (Ansi) X3J4 Committee time to include the PLC thinking in a redraft of the Cobol standard, due before the end of the year.

NEWS IN BRIEF

APL Programs in Use At Miami Convention

MIAMI – CBS News is using a series of APL-based report writing programs for analysis purposes during this week's Democratic National Convention. The programs are stored in The Computer Company's 370/155 in Richmond, Va., and are being accessed through three Novar terminals at the convention hall, according to Warren K. Mitofsky, director of statistical research for the network.

Though APL is an "ideal language" for this application, he said, it will be transparent to the terminal operators who need only enter key words and parameters to generate the desired reports.

The application includes a predefined file which describes each delegate and alternate in terms of income, age, sex, voting district represented, commitment to specific candidate and similar basic data.

Weather Bureau Computers Fooled by Erratic Agnes

WASHINGTON, D.C. – The U.S. Weather Bureau computers failed to accurately predict the extent of the flooding from tropical storm Agnes because the storm failed to follow the established pattern of other storms of the same type, hearings here revealed recently.

"The predictions did not take into account the change in direction of the storm, because that information was not available until early Friday morning," a spokesman for Rep. Jack Brooks' (D-Texas) Subcommittee on Government Activities said.

"By that time," he added, "the center was closed down and the information was not fed into the machines until around 7 a.m. Friday morning. As soon as the system had all of the up-to-date information, it predicted the extent of the disaster."

Predictions before that time had been based on the records of past storms of Agnes' type, but Agnes broke all the rules, he added.

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Ervin Reacts—Would Ban All Military Data Banks

By a CW Staff Writer

WASHINGTON, D.C. – The Supreme Court "unwisely and wrongly" ignored the danger of computer-based data banks when it rejected an attempt to outlaw such dossiers in the *Tatum v. Laird* case, Sen. Sam J. Ervin (D-N.C.) charged last week.

To remedy the alleged oversight of the court, Ervin introduced legislation in the Senate to ban the Army or any military service from conducting data bank operations on civilians.

In the case, the Supreme Court, by a 5 to 4 decision, said the plaintiffs had not proved actual harm caused by the Army data bank operations.

Majority Opinion

It did not rule that the operations were in any way constitutional, and the majority opinion, written by Chief Justice Warren Burger, promised that instances of actual injury from such operations would not go "unnoticed or unremedied."

In introducing his bill to ban all military data bank activities on civilians, Ervin said "the decision is a most disappointing one not only because it leaves Americans unprotected when they seek to vindicate these rights in the courts, but also because the Supreme Court did not explain or justify the basis for its decision in any convincing way.

"Unfortunately," he continued, "the opinion, in almost as many words, says merely that the plaintiffs have suffered no legal harm of which the court can take cognizance.

"But it makes this declaration by ignoring the complaint which alleges that plaintiffs have indeed suffered such harm . . . Even more essential, the plaintiffs have made clear the constitutional harm to themselves, to the American people and to the Bill of Rights."

Therefore, he added, "it is appropriate that Congress fulfill its responsibility to

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Platform Plank Adopted

Democrats Push Privacy

By a CW Staff Writer

WASHINGTON, D.C. – The Democratic Platform Committee has adopted a "relatively mild" plank on government and private data banks after moves to pledge the party to a stronger position on the issue failed here recently.

The new plank said the Democrats "strongly object to secret computer data banks on individuals. Citizens should have access to their own files that are maintained by private commercial firms and the right to insert corrective material.

"Except in limited cases, the same should apply to government files," the platform writers added.

Destroy Some Files

In addition, the plank stated that "collection and maintenance by federal agencies of dossiers on law-abiding citizens, because of their political views and statements, must be stopped, and files which never should have been opened should be destroyed. We firmly reject the idea of a national computer data bank."

Several congressmen and other political powers had urged a stronger plank on privacy on the platform committee, with some even arguing that the existence of computerized data banks on civilian activities could become a campaign issue.

One of those urging stronger action on the part of the platform committee and the democratic party was Rep. Edward Koch (D-N.Y.), who is sponsoring the Citizens Privacy Act in the House [CW, June 28].

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Makeshift Center Battles Odds to Put Out Payroll

By E. Drake Lundell Jr.
Of the CW Staff

MIDDLETOWN, Pa. – DP centers and managers have spared no effort to weather the effects of the recent flooding – and Pennsylvania's Central Management Information Center provides a good example of perseverance.

The center kept operating – running the weekly payroll – until flood waters reached its emergency generators forcing it to close down its Univac 1108. By then flood water was three-feet-deep outside the center.

As the flood waters rose in the center, J. Robert Ippolito, DP manager, and his staff managed to save 2,000 particularly sensitive program tapes by moving them through waist-deep water and on to the second floor of a nearby building.

But then the dikes around the Harrisburg airport (where the center was located) broke, making it impossible to save any more as the water reached a height of 10 feet in the computer room.

Mixed with the water was a large amount of oil from oil storage tanks nearby which were broken open by the flooding and debris from a lumber storage warehouse which broke open under the pressure of the water.

The staff that had been moved to the second building had to be removed by boat.

Univac found it could offer the center time on an 1108 in the Washington, D.C., area, so the center's staff began what was to be a week-long shuttle run from Harrisburg to Washington, taking over 10 hotel rooms there.

But when the D.C. center was found, it was nearly impossible to get the tapes that had been saved out of the second floor of the nearby building. Finally a crew went in by boat and broke into the building through the second-floor windows.

By shuttling operators and programmers to the D.C. area, the center was able to keep operating and hasn't missed a payroll yet, Ippolito said.

But at the same time the center was operating with these makeshift facilities, Univac was gathering the components for a new 1108 system from eight locations around the country and shipping them to the center as fast as possible.

The U.S. Navy Ship Parts Control Center in Mechanicsburg, Pa., had an abandoned DP center which it made available to the state operation at no cost.

The trucks carrying the equipment to the center had to receive special state police patrols to guide them to the new location, because at the time they started arriving many roads were closed to all traffic and the state police had asked all the trucking companies to keep their fleets out of the state until the flood receded.

With half his staff in Washington and the other half steam cleaning tape racks and other cabinets as well as washing tapes and files, Ippolito said the Univac staff began firing up parts of the new system within five days of the flood and had the total system up for test runs within 14 days.

Other trucking companies were pressed into service moving people and supplies, including desks and file cabinets, to the new center from the other location. Forms manufacturers quickly shipped in new forms to replace those lost by the flood, a loss valued at over $150,000.

"Everyone has been great," Ippolito said. "My people have been working around the clock and the people from Univac and IBM haven't gotten any sleep either. Our full system including 35 terminals spread across the state will be up and running in just two weeks from the worst of the flooding – it's unbelievable."

Innovation Marks Efforts to Capture Lost Data

(Continued from Page 1)

In some cases, however, that didn't help.

"We've got to find a new center," one DP manager said last week. "IBM has shipped us a new system, but we can't put it into our facility until it is completely dried out and that won't be for a few days yet.

"Luckily," he added, "we do have a back-up facility that we can use and only missed two days of processing time altogether."

For some of our customers, a service bureau manager said, "we didn't miss a run, but for some of the others we may be out of action for a while, since we may not be able to recover the data on the damaged cards. We're going to try though."

Even now it is difficult to estimate the amount of equipment damaged or destroyed by the storm, and most DP managers contacted last week were not ready to assess the overall loss to their centers.

Univac said it lost several million dollars worth of equipment in the Harrisburg area alone, but that was the worst area for its equipment. The firm lost at least one 1108, one 9300-II and 43 key-punches there.

"We won't know how much of the equipment can be saved or salvaged until we get it back to the factory," a spokesman for the firm said.

IBM officials said the firm had already shipped around 400 "boxes" into the flood area of the East Coast as replacements for lost equipment.

The firm could not be more specific on the figure, but did note that many of the boxes were unit record equipment and said that deliveries of replacement units were continuing to the area.

NCR announced it had lost at least 18 computer systems in three states, Pennsylvania, Maryland and New York. The firm couldn't give a breakdown of the loss, but said it didn't think any computer larger than the Century 200 was in the area.

At Honeywell, spokesmen said there was an "undetermined number" of systems down due to flooding.

In Wilkes Barre, Pa., alone, the firm said, at least two complete 115/2 systems were being replaced along with two Keynet key-to-tape systems at Seltex Corp.

In addition, two Keydex systems were lost at Glidden-Durkee in Reading, Pa., according to Honeywell.

Kybe Corp., a tape cleaner manufacturer, set up a "mini flood relief program" of its own.

The firm is making available to all users affected by the flood used E-24 tape cleaners for $3/day for unlimited use.

Bill Would Ban Military Banks

(Continued from Page 1)

the people under the Consitution by enacting legislation to insure that this sort of surveillance by the military never again happens."

While the new Ervin bill would prohibit the data bank operations on the part of the military, it would still permit such activities on the part of the FBI and other law enforcement agencies when the President deemed these types of operation necessary "to determine whether invasion, rebellion, insurrection or domestic violence" might occur.

In a strongly worded dissent to the majority opinion in the case, Justice William Douglas, joined by Justice Thurgood Marshall, charged that allowing surveillance and data bank operations on the part of the armed forces was "a gross repudiation of our traditions."

"The military," they said, "though important to us, is subservient and restricted purely to military missions."

In addition, the dissent said, "the act of turning the military loose on civilians, even if sanctioned by an act of Congress, which it has not been, would raise serious and profound constitutional questions. Standing as it does only on brute power and Pentagon policy, it must be repudiated as a usurpation dangerous to the civil liberties on which free men are dependent."

Democrats Finally Agree On 'Mild' Privacy Plank

(Continued from Page 1)

Koch, in a letter to the committee, proposed the establishment of a Federal Privacy Board that would consider the privacy aspects of all government actions including the potential harm to privacy that could be caused by new legislation.

This body, he proposed, would issue a "privacy impact statement" on each new piece of legislation outlining the long-term effects of the proposed law on the privacy of individual American citizens.

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Need for Safeguards Stressed

Lawyers Told of Danger of Using Outside DP Service

By Edward J. Bride
Of the CW Staff

ANAHEIM, Calif. — Lawyers using outside computer services must take precautions to guard against disclosing confidential or "privileged" client information, according to attorney Reed C. Lawlor.

If proper safeguards against disclosure are not taken, an attorney could face charges of "improper" or unethical conduct, Lawlor said here recently.

Summarizing opinions of the American Bar Association and the State Bar of California, Lawlor also said it was "improper" for lawyers to give "any information" to outside agencies without first screening data security precautions used by that agency.

Besides assuring that the agency "has appropriate rules for the preservation of secrecy," the attorney must warn the agency "of the needs for secrecy" and he must be convinced that the agency "is able to keep the matters secret."

"In other words," he continued, "it is dangerous if the lawyer stores all the documents and facts and opinions respecting the client's case in the memory of an outside computer service bureau."

The same problem applies to doctors, Lawlor suggested.

He proposed changes in the law, to make computer facilities "available for use by lawyers" while making sure the rights of clients are "fully protected."

One way to make DP technology available to professionals "without loss of client privilege" is to "make that part of the computer service center" employed by the law office "part of the facilities or operations of the law office."

If this cannot be done, then the law should be changed in order for that outside facility "to be treated as an extension of the lawyer's office," he suggested.

Codes of Ethics

The problem stems from clauses in various codes of ethics which protect attorneys' clients, Lawlor explained.

Quoting from the California Business and Professions Code, he observed it was the duty of an attorney to "maintain inviolate the confidence, and at every peril to himself to preserve, the secrets of his client."

The concept of privileged information between doctors and lawyers and their patients and clients also extends to secretaries and nurses, he continued.

The same applies to an attorney's bookkeeper, he said.

When an attorney or doctor does not limit the recording of information "within the confines of his own office, but engages someone outside his office to record and process the information," there is a question on whether the "privilege" is lost.

In-house computers answer that question for large law firms, but uncertainty persists with individuals or firms too small to have their own systems, he said.

Furthermore, disclosures "wholly irrelevant to the problem" are not protected by privilege.

Eliminate or Encode Secrets

The Committee on Professional Ethics of the California Bar concluded that "any confidence or secrets" supplied to a computer "either should be eliminated from such data or should be coded so that the client's confidence and secrets will not be disclosed," Lawlor noted.

Lawlor recommended there should be "no limitation on the type or amount of information" a lawyer can store or process in an outside computer facility, "without the client's privilege being lost, and without the lawyer being considered unethical."

He also called on DP centers to "assume an attitude of responsibility and vigilance, respecting the data entrusted" to them.

Bar associations and DP associations, he proposed, should "establish standards . . . for rendering full services to law offices without danger of loss of clients rights."

Among these standards, he said, "there should be a specification of requirements that must be met by DP centers" in order to qualify for storing and processing this information.

"Those that do meet those standards," he said, "should be certified by the State Bar."

Lawlor made his remarks before a recent technical symposium of the Association for Computing Machinery here.

New Printer/Plotter Means Big Savings For Aircraft Plant

ST. LOUIS, Miss. — An electrostatic printer operating on-line is expected to save $63,000 this year for the McDonnell Douglas Corp. Flight Test department.

Since January of this year a Gould 4800 electrostatic printer/plotter has been operating on-line with the firm's IBM 370/145. Compared to the previous plotter method, McDonnell Douglas estimates savings of $63,000/yr will result from reduction in computer time, labor, material and maintenance.

McDonnell selected an electrostatic printer because the previous plotting method could not keep up with the anticipated computer graphics output. The computer is being used to support the evaluation of flight and engine test data from four to 12 aircraft at one time. Flight Test previously obtained finished 11 in. by 17 in. performance data graphs at the rate of 12/hr utilizing expensive 10 cent/sheet graph paper with perforated feedholes.

Printing speed of the electrostatic printer was a real eye opener for McDonnell. It produces an 11-in. by 17-in. page in two seconds compared to five minutes by the previous plotter method. The 4800 produces both alphanumerics and graphics simultaneously which means that test data including grids, data and titling can be printed at one time. And because of the high printing speed, McDonnell will use the 4800 for core dumps – a frequent requirement to maintain its 6-segment data base.

In operation, the printer/plotter handles the present work load of 7,800 graphics page/mo. When McDonnell supports a full flight testing program, it will generate more than 15,000 graphics page/mo as well as up to 100,000 pages of alphanumeric tabular listings.

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DP Praised for Role in Generating Non-Tax Income

By Edward J. Bride
Of the CW Staff

NEW YORK – Computers are indispensable tools in generating non-tax income for states and local governments, with lotteries and off-track betting on the leading edge of a trend, government DP users were told here recently.

With financial crises growing, governments often turn to unorthodox sources of revenue, and computer use can assure security and controls over the newer methods of raising money, four panelists agreed.

The unfortunate experiences of the city's Off Track Betting Corp. (OTB) have proven the need for better planning, internal expertise and contract safety clauses, reported Howard Samuels, OTB president.

Though predicting a $51 million profit for next year's OTB operation, Samuels said it would be more efficient to have a "national OTB" system, and that the legalization of gambling could "put organized crime out of business."

Samuels was a member of the non-tax revenue panel, conducted as part of the first annual Government Data Systems Conference, sponsored by New York University's School of Continuing Education.

The two-day meeting was attended by

Samuels

about 100 people from government data centers, the educational community and the computer industry.

An official of the U.S. Department of Commerce proposed a $20 million, five-year project to build a statistical data base of "all federally generated, publicly available summary statistics data files."

Mitchell A. Krasny, manager of the Sumstat project, said large or small businesses, public users and federal agencies could take advantage of statistics for planning purposes, through communications terminals or by buying tapes.

"Distributors" of the data would be commercial time-sharing outfits or federal data centers, he said.

The data bank would not contain individual or confidential data, nor would it be a "national data center," Krasny said. Even so, the proposal was criticized by Dr. Herbert R.J. Grosch of the National Bureau of Standards, who said it looked like the data would be gathered "for the sheer joy of doing it."

Federal File Inventory

Krasny's plan would begin next year with an inventory of federal files, including cataloging currently available statistics. The "building blocks" would include such summaries as consumer income, government transactions, credit, manpower, savings, transportation, public utilities and other files, he said.

The project, costing "between $12- and $20 million," would proceed through 1976 with acquisition of a mass memory system, '77 with on-line communications and '78 for the final operational phases.

County and local officials must "control computer use as if they were running their own business," said Seth Grossman, director of the bureau of data processing and statistical services, of New York State's Social Services Department.

DP experts and management specialists do a disservice to officials by sometimes persuading these individuals that they can't trust their own judgment, Grossman said.

"Most local people in government," he explained, "need confidence that, while they don't know computers, they know the business they're in," such as legislation, administrative procedures, etc.

The first deputy city administrator of New York City, Dr. E.S. Savas, described a geographical information system, a type of computerized mapping program for use in urban planning.

Such a system, he said, could be used to plan ambulance dispatching, to monitor pollution or for other forms of medical assistance.

Dr. Murray Turroff, of the federal Office of Emergency Preparedness described the activity surrounding the programming of the wage and price controls, noting that programming the system in Basic enabled the computers to be "up" in four days.

An experienced planner of criminal information systems criticized federal requirements that criminal history files be placed in dedicated systems.

CW Photos by Edward J. Bride

Savas

Richard E. McDonnell, who helped develop pioneering criminal systems for Oakland, Calif., and Chicago, and who is now manager of Law Enforcement and Criminal Justice Activities at IBM, said shared systems "can provide more than adequate security."

The question of security and privacy "has been examined from the negative side, the 'what-ifs' have been emphasized," he said, rather than the "technical aspects" of assuring security and privacy.

McDonnell also suggested that "probably 50%" of the criminal history records in the identification division of the FBI do not contain an indication of the disposition of arrest. He predicted that through law, government policy or a Supreme Court ruling, these records will some day be required to be deleted from those files.

In another session, users were warned that system sharing problems, unless properly resolved in planning stages, could thwart their ability to manage separate operations.

Z.V. Zakarian, president of Western Union Data Services Co., said any proposed system must take into account the necessary fragmentation of authority among public administrators, and of their requirements.

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Editorial

Privacy Gets a Boost

The Democratic platform approved by the Democratic National Convention's Platform Committee contains a plank opposing a national data bank and objecting to the existence of secret data banks of personal information.

More sweeping than the Citizens Privacy Act, which concerns itself only with government data banks, the platform states: "Citizens should have access to their own files that are maintained by private commercial firms and the right to insert corrective material. Except in limited cases, the same should apply to government files."

Apparently more and more people are beginning to realize that "trial by secret dossier," whether it involves credit, employment or insurability, can happen to anyone.

Piecemeal protection began with the passage of the Credit Reporting Act. We hope this is the year that a sane, reasonable but comprehensive law will be passed to protect citizens from computerized defamation.

Letters to the Editor

'Sloppy Programming' Caused the Error

A headline on page 3 of the June 7 *Computerworld* states, "Slip of the Keypuncher's Finger Means City to Lose $290,000 in Tax Revenues." There were apparently several human checks of the data, but the real failure, it seems to me, is in the systems design.

Why doesn't the program check for numeric data in the field which is supposed to contain dollars?

This was not a clerical error, it was due to sloppy programming. A more accurate headline would be, "Poor Systems Design Causes City to Lose $290,000 in Tax Revenues." Let's put the blame where it belongs!

Judith M. Jack, CDP
Programmer
First National Bank of Nevada
Reno, Nev.

Some Codes Must Be Kept 'Secret'

As a regular reader of *Computerworld* and The Taylor Report, I think that readers, and the column itself, are overdoing the "objections" to computerized billing forms. While I agree with most of the objections generated in earlier examples, I believe that we have really overdone it in the June 14 Taylor Report.

Is it really not permitted for a company to place internal coding on the face of a statement, which, if explained to the customer, would either be confusing, irrelevant or embarrasing? For all we know the "301 56 R" is a credit code which would not be in the companies' or the clients' interest to delineate. Possibly the other codes refer to billing codes, or invoice groups which are meaningful only to the clerk posting the cash received in the accounting office.

I think we are going too far when we expect computer users not to codify anything.

The commentary on the four basic levels of data processing is interesting. Possibly it would be more complete if it were broken into categories such as programming, analysis, design and operations.

Mike Gates, CDP
Manager, MIS
United Salt Corp.
Houston, Texas

CDC Users Get SPSS

The Statistical Package for the Social Sciences (SPSS) is available on other computers than the IBM 360 and Univac series 70 [CW, June 21]. Northwestern University has converted SPSS for the CDC 6000 series computers and has distributed it to over 30 CDC 6000 installations around the world.

Inquiries about the CDC 6000 series version of SPSS should be addressed to: Mr. James Tuccy, Vogelback Computing Center, Northwestern University, Evanston, Ill. 60201.

B. Mittman
Director
Vogelback Computing Center
Northwestern University
Evanston, Ill.

Certification Needed?

I think that The *Taylor Report* is wasting its time with its surveys of professional opinion on the question of the necessity of certification for data processing practitioners. Competent managers should be able to tell the difference between performers and non-performers, and an index of factual knowledge cannot guarantee that a person will be a performer.

Thomas R. Kanabay
Senior Systems Programmer
Chicago, Ill.

SPDP May Help

Hamilton Armstrong Jr.'s letter "Let's Not Limit Professionalism" [Professional Viewpoint, June 21] has left me with a better feeling regarding my own standing in the data processing community. After having read several of Alan Taylor's and other articles, I was almost convinced that I had to be a CDP holder in order to be a good manager of data processing.

Although I have been managing a DP area for only four years, I feel that I have a professional attitude toward my job that could not be effected greatly by the expense of time and money needed to be certified and tested to hold the CDP. I do believe, however, that enrollment in an organization such as the Society of Professional Data Processors may be of great assistance both to myself and my employer.

I would like to see more information on the SPDP before joining, to insure I will not be wasting time and money here, also.

Gene C. Harris
DP Manager
St. Louis Diecasting Corp.
Bridgeton, Mo.

An Exercise in Elaborate Inefficiency

By Miles Benson
Special to Computerworld

Did you ever get the feeling, as you listened to someone's proud description of an elaborate problem solution, that perhaps an elaborate solution wasn't needed at all? Not that you doubted their solution, or their genius in finding it. But something more basic was wrong — they were using a 12-cylindered automatic transmissioned insect crusher as a substitute for a hand-propelled fly swatter.

That's what went wrong with the Interbase project — or at least I think it is. But I'm getting ahead of my story.

At the University of S, they're building a time-sharing system. They have a lot of enthusiastic and sharp graduate student people, and some top software guys from the local aerospace company which crumpled last year, and they really have a high-quality software staff.

When the vendor of their 4000 series supercomputer learned they wanted to build a better time-sharing system, he gave them a research grant and off to design they went.

One part of the time-sharing system was to be an interactive processor for the Basic programming language. The software staff, which loves acronyms and naming systems almost as much as constructing them, called it Interbase.

Well, things can get pretty nitty-gritty when you're working out the details of a time-sharing system. There are probably as many design goals as there are card chips in your keypunch catchers.

Commentary

Interbase was supposed to occupy minimal storage while running like a bat and servicing multiple users and a lot of other things. But it's that minimal storage requirement that got things off on the wrong foot.

One of the problems in a language processor is "How do you allocate storage for user arrays?" The answer is usually reasonably straightforward. You grab a hunk of contiguous central memory equal to the size of the array, and somehow use that.

But the Interbase implementors decided to improve on that. After all, if the user has a lot of large arrays, he can burn up a lot of central memory. So why not just stash the user's arrays out on external storage? And while we're at it, since arrays are sometimes pretty sparse, why not just store the honest-to-goodness values and not leave holes in memory where all the unused elements are?

Of course, that causes a new set of problems. Fetching information from external memory can cost a bundle in running time, and besides, how do you store a sparse array without wasting a lot of space?

The Interbase people came up with solutions to those problems, too. The sparse array one was easy. You store an array as a threaded list, with lots of pointers but not much data.

The running time one was a lot harder. They finally hit on the idea of a small holding tank in central memory, where small arrays would be kept in a mostly conventional way. That was a sort of compromise of the original idea, but it seemed to be necessary. At least small array jobs could run fast. (Well, only kind of fast. Now you had to test to see whether an array was "small" or not before you knew where to access it.)

But things still looked pretty bad for the big arrays. So they built a holding buffer in memory, and always checked it before doing the external fetch. If consecutive fetches were in the same buffer, no external references were needed at all. No one knew how often that would be true, but it seemed like a good idea.

Going back to the sparse array problem, threaded lists do solve the problem, but not very well. Searching a threaded list is pretty much a sequential process, and extracting array elements sequentially borders on the awful in terms of access times.

However, sophistication has an answer to everything. There could be another holding tank in memory, and it could hold the most recent five or 10 list-stored array elements accessed in central memory. That way, if an element is needed frequently, it's still in memory from its last usage. Again, the need to fetch from external storage is reduced.

Think about it, though. Interbase now has two holding tanks and a holding buffer, and access mechanisms which decide where to go to hunt for whom. It still has a lot of slow, threaded-list external memory array accesses.

But it's not as slow as it might be, and it does have a stable handle on the amount of central memory it needs. And it does have sophistication.

But is it worth it? Or is it needed?

Well, the worst thing is, nobody knows the answer — not even the Interbase team.

But I get that uneasy feeling that Interbase has another of those 12-cylindered, automatic transmissioned insect crushers.

Why Not More Comments on Cobol Bulletin #15?

The Taylor Report
By Alan Taylor, CDP

The Cobol Information Bulletin (CIB) is the only way the Cobol community has access to what is happening to Cobol. At least, that is what George Baird, the CIB editor, tells me. Understandably, therefore, he was a little disappointed at the reception of Cobol CIB #15, which appeared April 22.

This issue was sent out apparently to get comments on the latest Cobol changes.

After two months precisely two comments had come in. (One of these suggested that X3J4 "save Mother Nature's trees!") Baird suggests it therefore appears the CIB is not reaching the people it should. That certainly could explain matters.

The Information Bulletin concerned is quite important. It tells, for instance, of the total rewriting of the Cobol report writer – but it does not give any information as to how it was being rewritten, and what impact it has. It tells about the improvement in debugging, but it does not say how many people are thinking of implementing it, or whether it was already being implemented on any systems.

It tells of over 100 different changes planned in some future edition of Standard Cobol – but it does not say which are the important ones, or why they are important.

User Warnings

The bulletin does give a list (sometimes filled in, sometimes not) of whether or not any warnings of the changes' effects should be given to current Cobol users.

Generally, CIB, like its various predecessors, although formally addressed to the Cobol community, is in fact, only readable by people who make almost a full-time study of following Cobol specifications, and who get prepublication knowledge of them. I call those the Cobol implementors, and, personally, I do not think they represent the real Cobol community.

But as well as being an important document, CIB #15 is a disquieting one – at least to me. For instance, on Page III-2, I find a little entry saying that the library may be changed – but how it is to be done is "undecided!" "Nucleus Substantive Changes #15" tells me that the length of picture character-strings has been newly restricted. Why? Procedure Division item 40 tells me that "L" (the traditional symbol for pounds, sterling – normally written "£") is now banned from currency clauses. On one page alone, V-3, six new rules are introduced. Why?

Certainly on the surface there is plenty of reason for comment. But the reasons for the lack of comments is not the mailing list, George. The reason is that Cobol users have better things to do than waste their breath commenting on Cobol changes which are being railroaded through and which they cannot do anything about anyway.

The evidence of this is all there in CIB #15. The table of contents lists a "discussion of the cutoff date." But there is no discussion on the page concerned – just a bald definition that says the date is Dec. 31, 1971! That is only three and-one-half months *before* the CIB was even published! And you expect comments?

One Man's Experience

And even within this small framework where George Baird works – and I happen to know he works rather hard – there seems to be some problem of information flow.

For instance, George thinks the CIBs are the only method of communication with the Cobol community. Well, that simply is not so. Perhaps he might like to take a trip to Syracuse, N.Y., and visit with Hamilton Armstrong Jr., who is currently starting to put together the Society of Professional Data Processors.

Armstrong is a working member of the Cobol community, and has some experience with the Cobol establishment information flow – which may give yet another reason as to why CIB #15 is not getting any comments.

Fortran-Type Subscripting

Just over a year ago I heard from Armstrong about the fact that the Cobol subscripting was very awkward to write. He wanted Fortran-type subscripting, and tried to find out whom he should approach.

As Cobol is an Ansi standard, he started at Ansi, which sent him to Bema. From Bema he went to the X3 committees which it sponsors – and then eventually ended up at the Codasyl Committee on Programming Languages.

He sent his request in. Some months later (in response to a second request) he was informed his request was on the new business agenda. He was even sent a copy of the single page on which it appeared. It was then the 49th item listed under "new business."

By now he knew he would have to be patient, and so he waited for two months before asking again how things were going. He found that now his idea had been bumped by other "new business" which had come in, and was now 52nd to be considered.

Five months later, he suddenly received a notice that his item had come up for consideration, and had been rejected. He was given no chance to attend the meeting or to have anything to say about his idea. The committee did not explain why the rejection took place. He did receive a copy of the minutes – but that only showed that on a straw vote, five out of the 12 voting felt his request would be useful. Armstrong at that point lost interest in the system, if not the subject. I doubt whether he would have responded to the April CIB Bulletin #15 even if he had been on the mailing list. And yet he had something valuable to say.

So, if editor Baird wants some comments on CIBs, as he tells me he does, perhaps his first plan should be to ask the individuals who submitted requests for changes to the Codasyl Committee, and find out just why they were treated in such a way. A Cobol Information Bulletin describing this would be a very widely read publication. It would get plenty of comments.

(Incidentally, a copy of the CIB can be obtained from Bema, 1828 L. St., N.W., Washington, D.C. 20036, Attention CIB-15.

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A History of the Purpose, Effectiveness And Need Addressed by CIB #15

Purpose

"To solicit response from the Cobol community concerning both (the) scope and content of (the current revision to the Cobol standard being prepared by X3J4)."

Effectiveness

Two months after being issued only two responses had been received.

Need Addressed

Time Since Last Cobol Standard	5 years.
Time Before Deadline for Considering Updates	Minus 3 Months
Changes That Can Obsolete Cobol Programs	30
Changes That Won't Obsolete Cobol Programs	50
Changes That Are Undefined Regarding Obsolescence	50
Features Deleted	10
Areas Listed as Undecided Which May Appear	14
Pages	21
Maximum Space Available per Major Change or Deletion	0.14 page

The table gives some data on the effectiveness of current communications between the Conference on Data Systems Languages – which governs Cobol – and the Cobol community. The first two parts illustrate that the CIB Bulletin did not serve its defined function, and the last part includes data showing how necessary that function was, and how difficult the conference was making it. It can be seen that despite the fact that dozens of changes were being proposed which could obsolete Cobol programs, many areas were still undefined, much data on the effects of other areas was missing and the conference had stopped considering updates some three months before the CIB was even issued! *CIB Issue Date: April 24, 1972; Cutoff date: Dec. 31, 1971. (data for entries taken from Section III (Structure of the Revised Standard), Section IV (List of Elements Deleted), Section V (Language Elements to Be Added) and Section VII (List of Deferred Items awaiting Response from PLC).

Study Would Compare Industry DP Operations

Taylor Thoughts

As it reached me, the statement was mild, the type of thing that gets lost in the shuffle. But the reason for the mildness was not because of its unimportance – but because of the obvious unwillingness of an important organization to mislead people into thinking that they can do something when it does not know whether it can be done.

In this case it is not a matter of doubting the capability of the organization, but instead of not being certain whether the task itself is possible. It is a big task because it is trying to compare data processing operations in an industry. Now that is some sort of task!

But it is not one to be buried in its quietness. Reading the request you will see that the organization is asking about comparing data processing in other industries. But I am sure that it could learn quite a bit about the attempts by industries to compare, attempts by big firms to compare, attempts by anyone to compare DP costs.

So, despite the wording of the announcement – if you do know anything about successful attempts, or otherwise, or where there are plans to compare DP operations – then I would suggest you drop the American Bankers Association (ABA) a line giving a quick description.

I would like to see it succeed and be able to start the comparison. I think it would be good for the whole DP industry, as well as for the banking area. (Incidentally, I would welcome a carbon of your letter myself.)

Here are the details:

"The American Bankers Association (ABA) Operations/Automation Division has undertaken a preliminary study to investigate the possibility of comparing data processing performance among banks. As the project has just begun, the ABA is currently seeking information from other industries on their performance measurement endeavors. Please contact Operation/Automation Division, American Bankers Association, 1120 Connecticut Ave., N.W., Washington, D.C. 20036."

The 'Person' Was a Mail Stop

A reader recently sent me a copy of a "personalized" letter addressed to a "Mr. J. Smith Ms895a, 300 Concord Rd., Billerica, MA 01821." The letter began, "Dear Mr. Ms 895a . . ." The reader who sent this example – which is apparently written to a mail stop in a Billerica plant – thought it showed poor systems work.

"How many people do you know," he asked, "who have numeric characters in their name?" True, but it also illustrates the isolation of data processing knowledge that all too often occurs. The sender of the letter, a national extension university, somewhere among its expertise, must have a better knowledge than this. The question is how can we get our knowledge economically applied to our needs. Why don't we have a study on computerized addressing methods – and then a standard?

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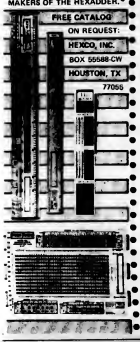

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Professional's Viewpoint

Timetable for Formation Of Society Provided

The responses to Hamilton Armstrong's challenge, "Let's Not Limit Professionalism" [CW, Professional Viewpoint Page, June 21], include requests for more information.

Armstrong's response to a typical request follows.

"Thank you for your letter asking for information about the Society of Professional Data Processors (SPDP). The society is new and is currently working under a temporary administration. We have set a comparatively short timetable for the production of a proper program, and in the meantime ask your support in getting established.

Committees Not Liked

In considering the proper program of the society, I have noticed the other traditional societies — whom we must honestly say are fairly ineffective — seem to work by long-term committees which cover whole areas, and which, once in position, prevent other people from covering any part of the same area.

From my 10 years' experience in the real world of data processing this is not an effective approach. It may be perfectly good for scientific communities, or for chambers of commerce, where the realities are often reflected more by the position a person holds and who he represents, than by his own interests or knowledge.

In this real world a project approach seems a lot more suitable. Many people I know would never want to work on a permanent committee — but will be happy to work on three months of project activities aimed at producing a specific result.

The Professional Viewpoint Page is prepared by the editors of *Computerworld* in conjunction with the Society of Certified Data Processors.

The aims of the so[illegible] of course, are to include p[illegible]alism both in data processing and among SPDP members. The activities then must be related to finding how much we actually know about professionalism — whether the facts we are being presented with are really true — and what the implications are.

Ansi

As soon as it is economically feasible, I hope the society will take its place among the member bodies of the American National Standards Institute, and will take an effective role in providing better formal standards, and in developing standards that do not currently exist.

Cobol

At the same time I hope we will discover new ways of using our resources — new facilities and new ideas that will bring our resources into greater productivity. For instance, there is the question of whether or not Cobol is currently being developed properly.

New Ideas

Similarly, there is the question of just how useful the multilanguage machines (like the new Burroughs 1700) are. I am totally ignorant about whether or not this is important. I would like to see it investigated, and the results sent to SPDP members. Then I would know whether it was important. I expect we will have a project devoted to checking this out, and report back to you.

To Segment or Not

The organization of the society is still unknown. We are currently taking a ballot as to whether or not it should be organized on a segmented basis. If the ballot says so, then the various groups (data processing management, technical experts, etc.) which do have their own responsibilities and their own problems will have their own subsidiary bodies. We shall see — but I would not be at all surprised to find that SPDP members want to have their own particular areas specifically addressed.

If so, we will deliver a budget to attack this possibility.

I began by saying we have set ourselves a fairly short timetable. To be precise, we want, by Sept. 1, to have developed a specific plan and program for implementation through September 1973. This will be sent to you for comment.

In the meantime, if you wish to either work with us or produce a competitive plan, please do so, and let us have it for publication for all members by Sept. 1, if possible, or at the latest by Oct. 1. At that time the members will be asked to vote in a policy and a new administration.

We think such a society should have been formed a long time ago, but we would be remiss in our professional duties by not assisting in its birth. We ask you to join with us and get the society going. An enrollment form is alongside." — Hamilton Armstrong Jr., Acting President, SPDP.

Enrollment Form — Society of Professional Data Processors

Please enroll me as a member of the Society of Professional Data Processors.

I am a practicing data processor. ☐
I am a teacher of data processing. ☐
I will pay the annual dues ($20) when billed.

Name _____
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Address _____

When completed please return to the Society of Professional Data Processors, c/o The Professional Viewpoint Page, Computerworld, 797 Washington St., Newton, Mass. 02160.

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Random Notes

Interface Links Hazeltine Terminals, PDP-11 Under DOS

BOSTON – Hazeltine 2000 CRT terminals can be attached to DEC PDP-11s operating under DOS, with an interface or driver-program, from TLM Systems Associates. With the software, the DEC CPU becomes far more useful than it was for business-oriented applications, the company said.

The interface treats the display screen and the keyboard of the terminal as separate logical devices and is said to support fully the Hazeltine 2000 special editing functions.

The interface is designed to be used with the batch input mode of the terminal: no software editing of the input data is performed prior to transmission.

A full- and half-duplex driver for interactive use of the terminal is also available from TLM, a spokesman noted.

The batch-oriented driver costs $300 and delivery is immediate from 17 Durham St., 02115.

First Data Has Mimic Specs

WALTHAM, Mass. – First Data Corp. has released Mimic documentation.

New sales literature and user's manuals have been prepared for all computers currently supported by the Mimic system: PDP-8, PDP-8/I, PDP-8/L, PDP-8/E, PDP-11/05, PDP-11/15, PDP-11/20, PDP-15, the Nova line and GRI-909.

The support for each computer includes text editors for source-program creation, absolute and relocatable assemblers, link editors and a debugging package with hardware simulators.

A standard set of peripheral devices is accurately simulated for each computer, enabling the user to build a simulator to match his actual hardware environment. The debugging aspect of the system allows testing, under simulation, of real-time applications with no interference from the debugging package.

First Data is at 400 Totten Pond Road, 02154.

Cybernet Office Opened

SALT LAKE CITY, Utah – Control Data Corp. has opened a data processing center at 2525 South Main St. as part of the company's nationwide Cybernet network.

The office includes Control Data Merc-II terminal equipment which provides customer access to 12 CDC 6000 Series computers. The Cybernet computers serve metropolitan areas from coast to coast.

One Source Program

Cobol Generator Supports Mixed Sites

By Don Leavitt
Of the CW Staff

CEDAR RAPIDS, Iowa – Installations with multivendor CPUs may still be able to use the same logic on all, without having to rewrite the problem for each, with the Comat Cobol source program generator from Network Data Processing Corp. (NDP).

Comat is unique in two ways, according to NDP. Unlike many source code generators, this one supports macroinstructions with which the user can sharply reduce the amount of code he must write.

Library Selector Code

More importantly for the user with multiple-vendor CPUs, however, Comat can generate Cobol acceptable to each of several compilers, under control of a library selector code.

From a single Comat program, NDP said, the system is currently producing source programs for Univac 9400, with Extended Cobol; NCR Century 200, with the Stage 2 compiler; Honeywell 200, with the Cobol D or H; Burroughs B2500/B3500, with standard compiler; and Honeywell 6000, with the ANS Extended Cobol.

Support for NCR Century 200 Level Two Neat/3 assembler is provided by still another selector code, and the library to generate DOS/360 ANS Cobol has just been completed, NDP said.

Macros Available

Macros are already available for producing the identification, environment and data divisions of the desired Cobol programs, and user-written macros for procedure division routines can be added "easily and without limitation," a spokesman noted.

The time required to resolve the macros into the target Cobol source code varies with the machine on which the resolving software is being run. The system is currently available on the Univac 9400 (in BAL), on the NCR Century 200 (in Level Two Neat/3) and on Honeywell Series 200 (in Easycoder).

Comat operates within 32K characters on a Honeywell 115, or in similar core sizes on the other host machines.

The system costs $6,000, which includes two days of training for any number of user personnel at NDP's offices, 321 Third Street S.E., 52407.

Modular Utility System Times, Debugs, Checks Fortran Programs

EDISON, N.J. – Fortran programmers working on large-scale CPUs can time, debug and check out programs during execution, with the Fortran Utility System (FUS) from Digital Solutions Inc.

One of the three FUS modules, the Fortran Automatic Debugging System (Fads), allows users to display the results of computations as they take place, from intermediate to final results, to easy-to-read format. The display process may be controlled dynamically, the company said, on the basis of logical IF tests.

The Fortran Automatic Timing System (Fats), the second FUS subsystem, lets users display CPU timing reports of Fortran subroutines at desired time intervals or source code locations.

The third subsystem, Fortran Automatic Checkout System (Facs), displays a report of how many times each source statement was used during the test run. As a byproduct, Facs also lists all source statements not used at all.

FUS commands are included in a user's source code, in the form of Fortran comments, which are not executed at all, once the program is in production mode.

Fads, the debugging system, enables the user to backtrack from an error condition, by printing in reverse chronological order the results of any number of computations prior to the error. This might be particularly useful in unraveling a divide-by-zero situation or any other condition that brings on an abnormal ending to the program, Digital explained.

The timing system, Fats, will also display a timing report in case of an abnormal ending, a spokesman said.

Facs can be used to design effective test cases, he added, and to verify that essential source code was in fact exercised properly in the test.

FUS is immediately available for use on IBM 360/370 equipment under OS, or under 360 CP/CMS, and on Univac 1108s under either Exec II or Exec VIII. The software will soon be available for CDC 6600 and 7600 systems as well, the company said.

Fads may be purchased for $10,000, while Fats and Facs cost $4,000 each. All three systems will be delivered for $15,000. Monthly rental plans, including purchase credits, are available.

Digital Solutions is at 100 Menlo Park, 08817.

Interactive Offers Profile

BRAINTREE, Mass. – Interactive Sciences Corp., has available a new Probabilistic Forecasting Language, Profile, on its Advanced PDP-10 time-sharing services.

Profile is used by technical and non technical personnel to generate reports up to 100 rows by 20 columns and to perform risk analyses on variables such as constants, vectors, discrete or continuous probability distributions, normal distribution, trend data and multi-variate distributions.

In addition to standard routines for Present Value, Future Value and Return On Investment, Profile enables users to incorporate special routines, definable by Fortran statements, in their models.

Interactive Sciences Corp. is at 60 Brooks Drive, 02184.

Cards Streamline Test Data

SOLNA, Sweden – About 20% of a programmer's time would be used to create and maintain test data "if he really had the ambition to test the innermost wrinkles' of his programs," according to Ulf Buxrud of Dataanalys AB. But, he added, this time could be reduced and the amount of good, well-controlled test data generated can be increased through the use of TDG-L software.

The user-defined TDG-L control cards appear to support a highly efficient generating system. In one example provided by the company, nine cards were said to be sufficient to create a 5,200 record file, in which each record was unique.

No Limitations

TDG-L can create sequential or index sequential files, with no limitations of the record layout or blocking factor, or the content of the data fields. All files are created directly from TDG-L; no other input, such as current user files, is used.

With the control cards, users can identify the arbitrary starting and ending values of up to 10 field/record and the increment to be made in each value, individually, from record to record within the file. Other parameters allow the user to exclude individual or groups of values in each field, the company said.

TDG-L can include fixed as well as variable data values, with alphanumeric as well as pure numeric fields. Accumulators with zero starting values are another feature of the system, the spokesman added.

The software runs on IBM 360/30 or larger CPUs including the 370/135, or on Univac Series 70 or comparable equipment. Core requirements are not immediately available.

The package costs $4,000 and present support is available only from the company's Swedish headquarters, although U.S. agents are being sought.

Dataanalys AB is at Bygatan 37, 171 55 Solna, Sweden.

IS YOUR COMPANY MAKING A MISTAKE?

It takes courage and maturity to recognize and admit an error in judgment. Take a good hard look at your DP operation. Is it an asset or a burden?

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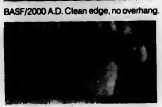
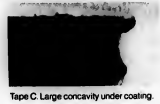

Tape A. Overhang on edge.

Tape B. Ragged base, large overhang.


Tape C. Large concavity under coating.

BASF

Computer Products

'RMTDOS' Expands Hasp Processing

VILLANOVA, Pa. – Installations using IBM 360/25s or larger processors as remote stations in a Hasp-oriented environment can handle telecommunications and local processing concurrently with the Remote Workstation Telecommunications (RMTDOS) program from Villanova University.

RMTDOS requires 10K bytes on the remote 360 and functions with a 10K DOS Supervisor. On a 65K 360/30 this would leave 44K bytes free for concurrent batch processing. By contrast, a university spokesman said, IBM has a package with the same purpose as RMTDOS, but which requires the remote "workstation" to be dedicated to the remote job entry function.

Villanova is using RMTDOS in a foreground partition of a 360/30 to allow students access to a nearby 360/75, while the university's administrative DP is being concurrently processed in the Model 30's background partition.

Hardware at the remote workstation under RMTDOS must include a console, card reader, line printer, punch and logging typewriter. The DOS supervisor must have the multiprogramming and multiple wait features.

The internal timer must be assigned to the RMTDOS partition, the university spokesman said, and the supervisor must include support for physical unit addresses and enough programmer logical units in the RMTDOS partition for the unit record devices, console and binary synchronous adapter (BSA) to be used.

The package sells for $4,000 to commercial installations.

Villanova's Zip Code is 19085.

Two Piping System Programs on T/S Net

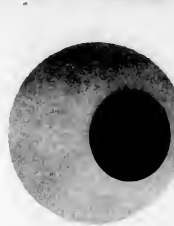
STAMFORD, Conn. – Two piping system programs, one for gas steady-state piping and the other for tiquid steady-state piping, are available on a time-sharing basis through National CSS, Inc.

Gas Steady-State Piping System Program (GASSS) and Liquid Steady-State Piping System (LIQSS) were both developed as proprietary products by Stoner Associates, Inc., Carlisle, Pa., and are accessed through the National CSS network.

GASSS determines the balanced steady-state pressure-flow relationship for an isothermal gas (natural gas, steam) network system composed of pipelines, compressors and regulators and is useful in the design and operation of natural gas transmission or distribution systems and municipal steam systems for determining such factors as pipe diameters, compressor horsepower and regulator settings.

LIQSS determines the balanced steady-state head-flow relationship for a tiquid (water, oil) network system consisting of pipelines, pumps and valves.

National CSS, Inc. is at 460 Summer St., 06901.



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Data Briefs

Multiplexer Test Set Handles Varied Speeds

NORWOOD, N.J. — The MTS-1 multiplexer test set from Timeplex, Inc. is plug-compatible with any full duplex multiplexer, asynchronous data set or terminal.

The self-powered unit generates and detects character patterns and control signals sent and received at standard data rates and voltages.

The set functions at switch-selectable rates of 50, 75, 110, 134.5, 150 and 300 baud plus one additional rate programmable up to 1,200 baud. Also selectable are codes of 7, 7.5, 9, 10, and 11 bit/char. with odd or even parity, the company said.

The MTS-1 costs $935 and is available immediately from Timeplex at 65 Oak St., 07648.

Tape Unit Handles CRTs, Minis

DETROIT — Remex, a unit of Ex-Cell-O Corp., has a punch tape reader/perforator combination for use with computer display terminals. Developed for use with the Tektronix, 4010 Computer Display Terminal, the Model RAR2075 is a bidirectional tape device designed to reduce computer core and operating expense, Remex said.

The Remex RAR2075 is software-compatible with minicomputers made by Hewlett-Packard, Data General and other vendors, a spokesman said.

The Tektronix version of the RAR2075 is directly interfaced to the 4010 graphics terminal. With the Remex reader/perforator and the Tektronix 4010, it is possible to convert data stored on punched tape to a graphic display on the screen for visual analysis, verification and revision.

The unit costs $1,995. Ex-Cell-O is at Box 386, 48232.

Controller Features Graphics

ANN ARBOR, Mich. — Ann Arbor Terminals Inc. has a vidao terminal controller that provides low cost, silent, alphanumeric displays at asynchronous data rates to 1,200 char./sec, plus full graphics, in black/white or color. It can driva multiple displays, which may be either conventional TV sets or standard 525-line video monitors.

The Model 206 provides serial or parallel RO33- or KSR33 TTY equivalent interface with RS232C, TTL, or current loop compatibility. The 64-character Ascii repertoire yields an 80 by 16 display format.

The device is plug-compatible with existing equipment and costs $946.

Delivery is 15 days. The company is at 6107 Jackson Road, 48103.

Are DAAs Needed?

WU, AT&T Disagree on Network Harm

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. — As many users know, the threat of harm to telephone facilities has been an important factor in AT&T's requirement for data access arrangements.

At present the DAAs are needed only on dial-up lines where customer-provided equipment is installed. But an additional Bell proposal to require "protective measures" on private line facilities operating with non-carrier equipment has been suspended by the FCC until the fall.

Carriers Differ

In an effort to determine actual instances of harm caused by non-carrier equipment, the FCC recently asked the common carriers to detail their experiences. The two largest carriers, Western Union and AT&T, differed noticeably in their findings.

The carriers were asked to comment on four cases of harm as defined by a study panel of the National Academy of Sciences. These include voltage dangerous to human life, signals of excessive amplitude, improper line balance and improper control signals.

Western Union said it had found no specific instances in its records "which had caused degradation of the [phone] network or harm or injury to other users of the network due to the connection of customer-owned equipment" to its transmission facilities.

AT&T said "private line interconnection with customer-provided equipment has not been trouble free and numerous cases of degradation of services to other users have resulted."

The Bell answer said customers' equipment has caused crosstalk, impulse noise, steady-state noise, carrier overload, imbalance and high voltages. "Customers have misused the [Bell] private line service increasing the potential for harm . . . to other customers," AT&T said.

Protection 'Required'

The Bell System said it believes customers will "willfully or unknowingly" connect equipment that causes harm because of improper design or improper installation. Based on this assumption, protection of telephone facilities is required, it said.

Western Union said "it is [our] intention to make connection of customer-owned equipment . . . as simple as possible. We have elected to . . . control this [customer] interface by specification . . . rather than special hardware to regulate the interface."

The Telegraph Company added it intends to design test equipment to locate malfunctions and this equipment can probably be incorporated into customer equipment provided necessary safeguards are met.

While Western Union said it will keep records of instances of harm so that statistics will be available for review by the FCC, a Bell System spokesman said AT&T now has no statistical data gathering method in operation to monitor such situations. The Bell System said it is exploring ways to monitor such harm.

As more and more customers operate on their own facilities, instead of phone company lines, it "expects to relax protective requirements because of less stringent needs of our digital plant," Western Union said.

On the other hand, AT&T apparently is determined to expand its protective requirements to private lines. Although it has proposed the installation of private line protection without cost to the user, some users question the need for such measures. Others question whether these measures will affect the quality of their data transmissions.

ITT Offers $65/mo CRT With Acoustic Coupler

EAST RUTHERFORD, N.J. — A CRT display terminal that competes in price with teletypewriters has been introduced by the Data Equipment and Systems Division of ITT.

Called the Model 3501 Asciscope, the units includes a display, keyboard, buffer, modem, acoustic coupler and maintenance for $65/mo, ITT said. When connected via the acoustic coupler, the unit can transmit at 110 bit/sec in 11-bit format or 300 bit/sec in 10-bit format. The Asciscope can also be hardwired via a data access arrangement and interfaces are available to use external modems at speeds of 1,200 or 2,400 bit/sec, ITT said.

The CRT is described as compatible with communications software that can interact with Model 33 and 35 TTYs. The 12-in. screen can display 960 characters and the device can operate in roll, page and block (buffered) modes which are switch-selectable by the operator. The block mode allows transmission of selected portions of the display bracketed by control symbols.

Printer Interface

A printer interface is available to connect a Model 33 receive-only TTY. The CRT performs input parity checks and displays detected errors as solid squares on the CRT. The Asciscope can communicate with other terminals or teletypewriters and the unit includes an MOS memory that can store the contents of one complete display format.

Maintenance for the Asciscope will be provided by ITT service centers which will replace the unit rather than perform on-site repair, ITT said. The CRT costs $2,195 and first deliveries will begin in September. ITT is at E. Union Ave., East Rutherford, N.J.

Dual keyboards are served by one display.

CRT Has Split-Screen

JACKSONVILLE, Fla. — The Atlantic National Bank, which serves as the home office for the 19-member banks of the Atlantic Bancorporation, has devised a technique to permit two tellers, using separate keyboards, to share a single CRT terminal, which is part of the Sanders 720 data display system.

Each 524-character half of the split screen is addressed as a separate logical unit," according to J.M. Neustadter, bank vice-president. The CRTs are connected to a 360/40 via local lines and another remote line handles credit verifications via ICC modems operating at 2,000 bit/sec, he added.

The bank previously had IBM 2260 display units but the switch to the Sanders systems afforded "substantial savings," Neustadter said.

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Policy Paper Scheduled

Canada Plans Interconnection

HALIFAX, Nova Scotia – The Canadian Department of Communications will issue a working paper on a suggested interconnection policy later this year, according to Robert Stanbury, Minister of Communications.

Speaking at the annual meeting of the Canadian Telecommunications Carriers Association, Stanbury said the scheduled paper will be a "think piece" to narrow the "unlimited spectrum of options" in the area of interconnection policy.

Point of Connection

Among the problems to be defined concerning the interconnection of [foreign] attachments to the Canadian telephone network, Stanbury listed the point of connection to a building (outside or inside); ownership of the device and responsibility for renovation, maintenance, and compatibility; and agreement on a reasonable charge for an interconnected device.

While the business user has traditionally paid more for his communications services than the individual customer, there is some question whether this relationship should continue in the case of interconnected attachments, Stanbury said.

Clary Has Strip Printer

SAN GABRIEL, Calif. – Clary Corp.'s strip printer, the SP-20, will interface with Ascii, Baudot and IBM 1050 type devices operating at speeds up to 135 bit/sec.

Originally designed to accept inputs from the Kartrak railroad car identification system, the strip printer can handle pressure-sensitive and standard paper tape. The SP-20 can accept most standard modem interfaces and costs $1,325. Clary is at 320 W. Clary Ave., 91776.

Any new attachment policy must assure that the integrity and efficiency of the present (communications) networks be maintained. It must assure fair access to services new and old for small and large business, Stanbury said.

Terminal devices, including those providing access "from man to remote data processors," will be the most dynamic sector of Canadian communicatons systems development in the next 10 years, Stanbury predicted.

Neither the terms "interconnection" nor "attachment" adequately describe what is actually an "exciting rediscovery of the public switched network," he said. What has been essentially a voice network for 75 years is now emerging with "virtually hundreds of new applications," he added.

Among these applications are "the vast unpredictable worlds of computer peripherals and terminals, he said, predicting that the bulk of the terminal devices will operate over the public switched network. The terminals will utilize keyboards, fluorescent tubes, acoustic transducers and various electroluminescent devices, Stanbury said.

FCC Rules on Satellites; Service Seen by 1975

WASHINGTON, D.C. – The Federal Communications Commission has approved open entry for all qualified applicants in the area of domestic satellite networks. But the first service is still some years away, according to industry experts.

Rather than combine applications of similar technology, as had been recommended by the commission's Common Carrier Bureau, the ruling said all applicants would be considered if they can demonstrate they are "financially and technically qualified to provide domestic satellite service."

For users the ruling means that domestic satellite services are one step nearer, but the first systems are still probably several years away, according to most experts. One satellite technology consultant said it is doubtful any system could be in operation much before 1975.

While domestic satellite service has been pending since the FCC issued its first notice of inquiry in 1966, satellite circuits in other parts of the world, including the Atlantic and Pacific oceans, have been available to users for some time.

There are presently eight applications for domestic satellite service pending before the commission. Under the latest FCC decision, applicants must notify the commission by July 25 on how they plan to proceed.

"Even if we file our construction permits within 30 to 60 days, we would still need final FCC approval, and that delay together with the necessary construction time would make it doubtful that we could begin service in less than two-and-one-half years," a spokesman for one applicant firm said.

The Novar 5-80 Auxiliary Printer offers high-speed capability for locations with printing volumes too large for Selectric printers. Provides upper and lower case printing of a 96 character set at speeds up to 50 characters-per-second—50 cps on-line too. Uses sheet fed or continuous forms. Attaches to any Novar tape terminal with a single connector.

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Novar 5-50 and 5-60 terminals can receive incoming data at high speeds, up to 2400 baud, and record the data on tape. Then, off-line, the tape can be used to drive the terminal's Selectric printer at 15 characters-per-second, or a Novar 5-80 Auxiliary Printer at speeds up to 50 cps using 96 character sets. Fifty cps on-line too using the terminal's buffer.

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Bits & Pieces

1100 Series Users Promised Better Service, Savings

BLUE BELL, Pa. – Users of Univac 1100 Series systems can save "at least 20%" of their maintenance costs by arranging with Comain Corp. to provide third-party service.

Comain, which will specialize in Univac computers, also promises to provide a senior engineer in residence at each installation and to maintain a normal parts inventory at the site.

The company is maintaining coheadquarters, here at 6198 Butler Pike, 19422, and in Los Angeles at 1801 Avenue of the Stars, Century City, 90067.

System Eases Binary Punching

PLAINVIEW, N.Y. – The problem of punching program tapes in octal or hexadecimal notation is said to be considerably simplified by the Patchmaker system from Varisystems.

Intended primerily for process control and typesetting industries, the device will probably be suited to users of 8- or 16-bit computers who do extensive changing of programs or table values stored on punched paper tape, the company said.

The hardware consists of a hexadecimal keyboard with 20 positions, Tally PB-30 tape punch, address display and data display. Price is not definite, but a spokesman estimated it to be between $1,000 and $2,000. Delivery is 30 days from 207 Newton Road, 11803.

Study of Terminals Published

NEW YORK – An analysis that takes the reader from planning to implementation of point-of-sale terminals has been published by Gambit Menagement Strategies as the second pert of its Point-of-Sale Report.

Subjects covered in the report include input capabilities, processing operations, output devices and cost justification.

Part two of the series costs $95. Pert one, "Configurations," is also availeble at $45 from 1440 Broadway, 10018.

– – –

The Model 1027 paper tape winder from Ribbon and Ticker Paper Co., Paterson, N.J., offers a standerd take up speed of 70 char./sec, with 115 char./sec availabla as an option. Prices start at $90.

– – –

A line of clear black opaque punched tape patches for splicing end correction are offered at $10/500 patches by Cycle Tape Equipment, Los Gatos, Calif.

More Preventive Maintenance Needed?

By Frank Piasta
Of the CW Staff

"I don't think we get in enough preventive maintenance (PM), but it's our own fault." That's how one user described his feelings in a recent random *Computerworld* survey on maintainance scheduling of six users.

Users generally felt that more time should be devoted to PM but they were limited by the number of hours they could spare the system.

There seemed to be a definite correlation between the value placed by the user on preventive maintenance and sophistication. The more sophisticated large users typically scheduled times for preventive maintenance during the prime shift on weekdays and dedicated more time on a per system average than did the smaller users.

The smaller users told of trying to get the service personnel to postpone or hurry the procedures so more important jobs could be done on the computer. The larger user, typically felt the PM routine was on an equal priority level with any other job in his shop.

The number of engineering changes called for by the computer manufacturer in some installations were contested. The user who realizes his system will be down for PM seems to grow disturbed at the idea his system will be down for some time – up to 96 hours in one case cited – to have the changes made.

The time available to maintenance, no matter how carefully scheduled, seems unable to be stretched to fit both the normal routine work and the planned engineering changes. One user said his systems were some 250 hours behind in labor time on engineering changes. He said they were catching up, but admitted that progress was slow.

One solution was to "negotiate" with the service people to handle the more time-consuming engineering changes at times when the system was most readily available – for example, on weekends.

New Peripherals, Too

Memories Cut Cost of PDP-8 Systems

MAYNARD, Mass. – Digital Equipment Corp. has effectively reduced the cost of systems based on the PDP-8 minicomputer with the introduction of lower-priced core memories and disk drives.

The company also added several peripherals, including printers, displays and terminals, to the PDP-8 line, as well as several unbundled software packages.

The new memories, manufactured by DEC, can cut the price of an 8K-word PDP-8/E from $7,740 to $5,650 (27%), for example. A 4K PDP-8/E drops from $4,990 to $4,490 (10%).

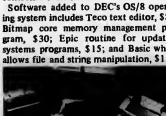
Another effective price reduction resulted from the introduction of the RK8-E disk cartridge drive which offers 1.6M-word capacity in a single cartridge. The unit, including control, sells for $7,900, less than half the cost of the previous storage. The controller can accommodate up to three additional drives for a system total of 6.4M words. Transfer rate is 120 kword/sec and average access is 50 msec, which can be reduced by overlapped seeks.

The VT8-E, a low-cost alphanumeric display terminal, is priced at $1,900 and includes a CRT with a capacity of twenty 64-character lines, keyboard and an interface for the LA30 Decwriter or LS8-E line printer.

The LS8-E, also new, is a 165 char./sec line printer which sells for $5,000. DEC also added a receive-only version of the LA30, the LA30A Decwriter, which costs $2,500 and a two-color (green and red) oscilloscope plotter display, the VR20, for $4,000.

Among communications-oriented equipment offered by DEC is a version of the LA30-E equipped with an EIA interface for $3,195, the RTO2 data entry terminal with alphanumeric plasma display at $1,300; and a new series of asynchronous data interfaces, the KL8-F, an improved version of the KL8-E which offers adjustable formats of 5, 6, 7 or 8 bits, double buffering for use with asynchronous modems to 2,400 bit/sec, and additional speeds including 134.5 and 1,800 bit/sec. It is priced at $425. The KL8-M modem controller costs $250.

Software added to DEC's OS/8 operating system includes Teco text editor, $55; Bitmap core memory management program, $30; Epic routine for updating systems programs, $15; and Basic which allows file and string manipulation, $150.



Peripherals for the DEC PDP-8 include the LA30-E Decwriter, RK8 E disk drive, LS8-E line printer and VT8-E CRT display.

Terminal Uses Novel Tape Drive

NEW BERLIN, Wis. – Venture Computer Systems has added a magnetic tape cassette transport to its Venture 400 intelligent terminals to permit file updating with a single drive.

The new transport is said to allow the user to read a record, update it and re-record it into the same place on the Phillips-type cassette.

This is made possible by extremely accurate tape positioning and by record formatting standards that allow only 80,000 characters to be written on one cassette, the company explained.

The terminal is intended to replace Mohawk 1100 and 6400 Series units and it totally compatible with them, the company said.

Designed for use by small companies that share a processor as well as larger organizations that maintain their own communications networks, the Venture 400 consists of the cassette drive, 202-type reverse channel, 1,200 bit/sec modem, IBM Selectric typewriter, console and a small computer, all housed in a desk-sized enclosure.

The computer, made by Venture, offers 100 instructions and solid-state MOS read-only and random-access memories. The ROM has a cycle time of 1.74 μsec and can hold 100 characters. The RAM cycles at 600 nsec and typically holds 1,000 characters, although it can be expanded to 32K, the company said.

In addition to the write-in-place capability, which the company said had gone through 999 test cycles without error, the new cassette transport offers improved compatibility among drives, and increased reliability due to the elimination of the need for calibration, the company explained.

Four format programs, written by the user in a formatting string language, can be stored internally in the terminal. Other format programs can be read into storage from the cassette, the company said. Data checking, editing and arithmetic operations such as extensions and summations can be performed.

The standard terminal costs $7,000. Special systems that are preprogrammed by Venture can be provided, the company said, for about $4,000 more.

Delivery of the standard terminal is 30 to 45 days from 2305 South 170 St., 53151.

So well, in fact, that IBM System/360 users swear by our Large Core Store. We've already shipped dozens of them. Capacities? Ys, 1 and 2 million bytes. Cycle time? Ranges down to 1.8 microseconds. Cost? A lot less than IBM's 2361 large core memory. That's our LCS. Plug-compatible with the 360 . . . interchangeable with the 2361. It expands your 360's memory and it remembers to save your money.

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Eliminate the pokey old punchcard, go directly to magnetic media, and you can save a bundle.

MDS grew out of this simple idea, and the newest in a full spectrum of key-to-tape capabilities is the 2400 Key Display System.

The tutorial CRT tells inexperienced operators what to do, and at the same time, lets them see they're doing it right.

Quicker, cleaner data entry, sure, especially where operators deal with many kinds each day. And with improved throughput, you'll discover friendlier costs both for equipment and people.

What's more, System 2400 can be all you want it to be. A dedicated cluster of up to 20 stations. Remote communications with data entry capability. An add-on to peripheral processing.

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Shocking fact. All too many of today's big mainframes spend as much as 80% of their time not computing. Expensive, when you think about it. All that sorting and printing and editing. System 2400 can be configured to do all that kind of clerk's work. At peripheral rentals instead of mainframe prices.

We believe there are a surprising number of companies with large data operations that could be saving $100 per hour or more, compared with the options. A bigger mainframe, another mainframe, or more shifts.

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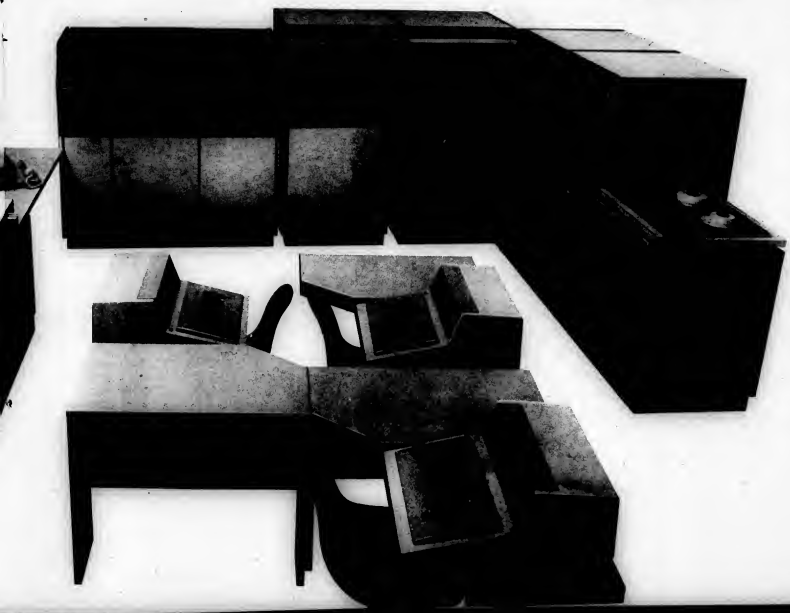

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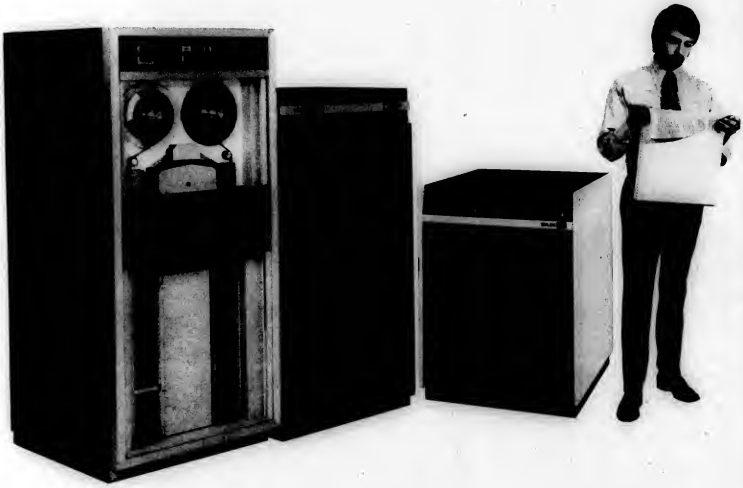

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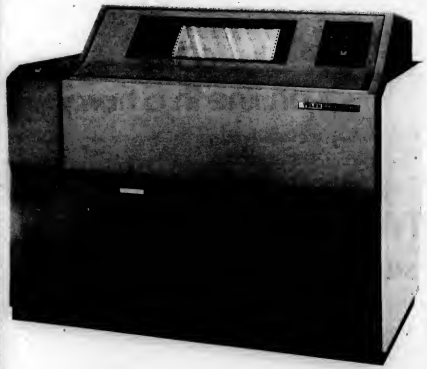

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S/3 Employed as Nucleus of System Dedicated to Needs of Warehousemen

CHICAGO – A complete turnkey management information system for use in large warehouses has been developed by Computer Logistics Corp.

The Logistics Data System LDS/3 based on an IBM 3/10 with 24K bytes of memory, includes all necessary software, the firm said, to provide the public warehouse operator with warehouse receipts; bills of lading; over, short and damaged stock reports; inventory activity reports; management reports; and customer billing.

The system also includes a multifunction card unit, a keyboard terminal and a medium-speed printer.

Random access storage is provided by a dual platter 10M byte disk drive.

Included in the price of about $3,400/mo are more than 200 programs ranging from simple print operations to file maintenance routines. The user can contract for only the software at a lower cost. Alternately, the user can, at higher cost, have the company supply all of the hardware and software, and manage the installation for him.

The system can also be programmed on the user's site, the company said.

Another version, LDS/I, Logistics Data System/Interactive, connects the subscriber to a central network computer and allows immediate response on current inventory and order status and automatic document preparation for shipping and receiving.

The other system, LDS/B, is designed for remote batch processing, also using a central computer network. The subscriber may also enter information at his terminal concerning shipments and receipts, the company said.

Both systems use telephone lines to connect the subscriber to the central computer. All inventory records are stored at the central site and entries made into the terminal update records and become the basis for preparing inventory reports, account billing and monthly statements.

Computer Logistics is a subsidiary of Western Union Corp.

Typesetting Equipment Includes Mini

LOWELL, Mass. – A low-cost, modular system for setting type, the System 1 from Graphic Systems, Inc., includes software and applications support.

The system consists of the Scanner, Editor and Typesetter as well as a minicomputer, and can produce high quality photo-typography from hundreds of type styles, the company said.

The Scanner, manufactured by Cognitronics, uses laser scanning techniques and can operate from remote locations, display hand-written matter and recognize hand print control entries which can perform such functions as calling out formats. Input to current models is OCR-A, although an OCR-B version is being developed, according to the company.

The Editor, a CRT terminal from Omnitech which is used for editing and proofing, enables the operator to create or change copy and format prior to typesetting.

A Data General Nova 1200 minicomputer with 8K words of core memory is equipped with the necessary typesetting software for formatting, hyphenation and justification and pagination. It uses a simple input language to minimize operator training, according to the company.

The Typesetter can handle as many as four fonts simultaneously. A system of 15 lenses allows the device to set each font in sizes from six to 36 point type. The use of font segments, the company explained, lets the user build a large library of fonts. The device can set up to 75,000 char./hr.

Current models use a BRPE paper tape reader and punch to interface the equipment. A "floppy" disk model is being developed and should be ready for delivery during the first quarter of 1973, the company said.

The price of a complete System 1, including Scanner, Editor, computer, two Typesetters, paper tape equipment and software is $104,000.

The company estimates that the disk-equipped version will cost $130,000. Delivery is 120 days from 217 Jackson St., 01852.

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University Microfilm Introduces Three Readers for COM Microfiche

ANN ARBOR, Mich. – University Microfilms has brought out two desktop microform readers and an improved version of its 2240 Microreader for use with COM output.

The desktop readers offer 9-in. by 12-in. screens for easy viewing. The 320 Microfiche Reader features a vertically positioned screen and the 322 Microfiche Reader has a horizontally positioned screen.

A "zoom" feature permits the user to increase the magnification of any particular lens up to 25%. Extra lenses offering magnification which ranges from 10X to 49X are available for each machine.

Both of the units, which sell for $190, are UL and CSA approved.

The 2240 Microreader at $295 is said by the company to be the lowest-priced motorized portable microreader available. Educational discounts are available.

Features include a case of high-impact ABS plastic and a 12-in. by 12-in. polacoat screen that provides uniform illumination. The 2240 reader comes with 17X or 22X lenses with 40X optional and accommodates 16mm or 35mm film.

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CAI to Extend To 26 Schools In Georgia System

ATLANTA — A far-reaching program to extend the benefits of computer training and computerized learning techniques throughout Georgia's vocational-technical school system will be inaugurated later this summer by the Georgia State Board of Education.

Covering 26 schools, the program will concentrate on two primary areas of instruction — training in computer operation and programming, and secondly, remedial mathematics and remedial reading courses.

Pilot Project

George W. Mulling, state director of vocational education, views the project as a pilot which can be extended in the future to other schools and areas of instruction such as electronics, automotive, machine shop and electrical.

A Univac 1106 computer system will be installed in the computer center of the Georgia Department of Education here and will be connected by telephone lines to terminals in each of the schools. In 12 of the schools, where computer operation and programming will be taught, the terminals will be small computers, Univac 9200s. The terminals can function either as stand alone computers or, if required, transmit the data to the 1106 system for processing and receiving the completed work from the larger computer over the communication lines.

The main purpose of the 9200s will be to give students actual hands-on operating experience with the computer. The students will be taught languages so they can prepare their own programs and then test them on the 9200 system.

The computers will be installed in Atlanta, Augusta, Columbus, Rome, Albany, Athens, Griffin (Griffin-Spalding County Area), Gainesville (Lanier Area), Macon, Savannah, Clarksville (North Georgia Area) and Americus (South Georgia Area) and Brunswick Junior College.

At 11 other vocational-technical schools a Uniscope display terminal will be installed. The primary aim in using these terminals linked to the central computer will be computer-assisted-instruction (CAI) to help students in remedial mathematics and remedial reading.

Special programs have been developed to allow students to proceed at their own speed through the instruction curriculum using the terminals.

The student responds to the problem by keying in the answer on the keyboard. Each letter or figure keyed-in simultaneously appears on the screen. When the entire answer is presented, it will be transmitted to Atlanta, where it will be checked and graded. If it is a correct answer, the student proceeds to the next question.

The Univac Interactive Language (UIL) will be employed in the system.

In addition to the instruction, the computer will handle student and teacher registration and grade reporting from information transmitted from the terminals.

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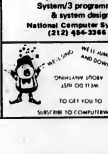

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computer industry

a Computerworld news section about the nation's fastest growing industry

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CI Notes

Printec Plans Units

WOBURN, Mass. – Printec plans to increase the capability of its OEM printer line with a 96 char./line unit, up from the present 64.

In addition, the firm is working on a more complete I/O device that will probably include a keyboard, printer and magnetic tape capability. Announcement is slated for this fall.

Pertec to Market Key-to-Tape

LOS ANGELES – Pertec Corp. will begin marketing its key-to-tape data entry system to OEMs.

Pertec has supplied several thousand key-to-tape systems to the Singer Co. Business Machines Division since beginning manufacture of the systems in 1969.

Pertec and Singer recently announced a new agreement which gives Singer exclusive rights to market the system in all foreign countries except Canada. Pertec will market key-to-tape systems in the U.S. and Canada in addition to continuing to supply Singer with the systems.

Soviets Look at Car Systems

WESTWOOD, Mass. – The Soviet Minister of Railroads, Boris Pavlovich Beschev, and seven of his ranking deputies visited Computer Identics Corp.'s exhibit at Transpo '72 to discuss the firm's computer-based transportation end distribution control systems.

AMS Gets Telex Memory Order

SUNNYVALE, Calif. – Advanced Memory Systems, Inc. has announced the signing of an agreement with Telex Computer Products, Inc., providing for the purchase by Telex of AMS basic storage modules for use in add-on memory systems for IBM 370 computers.

Supershorts

Ampex's Computer Products Division has reorganized its OEM sales force geographically to "improve customer service efficiency."

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Federal Screw Works has exercised its option to acquire an exclusive license from Interface Systems, Inc. to manufacture and market worldwide an electronic voice synthesizer. Federal Screw Works has provided financial support under its option for this program during the past year.

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Raytheon Service Co. has been selected by Nasa for contract negotiations to provide continuous logistics support for tracking, data acquisition and communications facilities of the Nasa Space Flight Space Tracking Data Network.

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Computer Machinery Corp. has completed successful negotiations with Amalgamated Wireless (Australia), Ltd., whereby AWA will assume total responsibility for marketing and maintaining CMC products in Australia, New Zealand and Papua, New Guinea.

– – –

Data-Tronics Corp., a wholly owned subsidiary of Arkansas Best Corp., has agreed to purchase certain assets and computer programs of Norvell Systems, Inc.

Court Figures Reveal

IBM Lease Revenue Share Nearly 80%

By E. Drake Lundell Jr.
Of the CW Staff

PHOENIX – The first analysis of the census figures compiled by the court here in the Greyhound antitrust suit against IBM indicates that IBM accounted for almost 80% of the lease revenues generated by firms in the computer business in 1970.

The analysis, made by Greyhound's last witness, Patrick J. McGovern, president of International Data Corp., a market research firm, showed that IBM accounted for 77.2% of all lease revenues from mainframe makers and peripherals companies during that year, but that its percentage had been dropping.

In the area of lease revenues from general-purpose computer equipment, which he defined as machines of the size of a System 3 through a 360/65, McGovern said the court documents indicated IBM lease revenues accounted for 77.7% of all such revenues in ;970.

The testimony was the first time a breakdown of the court census figures had been entered into the record of the trial.

The court census figures come from documents the court asked thousands of firms conducting business in the computer industry to prepare stating their computer-related revenues for the past 15 years.

In total lease revenues derived from domestic U.S. computer users, McGovern told the six-person jury that IBM's share of the market was 83.7% in 1964, dropping to 78.9% in 1967 and to the 77.7% figure at the end of 1970.

If the figures for just the top eight manufacturers are taken into account, he said, the IBM share in 1964 was 84.3%, dropping to 80.5% in 1967 and to 79.6% in 1970.

Overall, the court census figures indicate the lease revenues for the top eight firms in the business were around $1.2 billion in 1964, growing to $2.1 billion in 1967 and to $3.1 billion in 1970, McGovern said. The IBM portion of the total was $991 million in 1964, $1.7 billion in 1967 and $2.5 billion in 1970, he added.

The court census figures show, he indicated, that the lease revenues for independent peripherals companies and for data preparation equipment makers have grown from around $450,000 in 1964 to $12 million in 1967 and to around $82 million for the last year of the census, 1970.

In just the area of general-purpose computer equipment, McGovern said the figures show the lease revenues in the industry were around $1 billion in 1964, $1.8 billion in 1967 and just over $2.7 billion in 1970.

The analysis of the 1970 figures for lease revenues that were supplied to the court by the various manufacturers show that in addition to IBM's 79.6% share of the market, Burroughs accounted for 4%; Honeywell for 4.7%; Univac for 2.9%; RCA for 2.8%; GE for 2.2%; NCR for 2%; and Control Data for 1.9%, McGovern testified.

In the area of computer systems used in general business applications, McGovern said the leasing companies had been able to grab around 15% of the market, primarily leasing IBM machines, in 1970.

This was a large increase over the 1% of computer systems leased by third-party leasing companies in 1964 and the 5% leased by the firms in 1967, he indicated.

In the court proceedings, the IBM lawyers cross-examined McGovern closely, pointing out the revenues for the entire computer industry were around $10 billion in 1970, not just the $3.2 billion that he indicated.

But McGovern said he had been using the figures for the lease revenues in the business, pointing out leasing equipment was one method by which computer manufacturers tried to keep control over the installed base of equipment.

Adapso Challenges 'Secrecy' Ruling in IBM Antitrust Case

By a CW Staff Writer

NEW YORK – Computer users and the industry should pressure the government to reveal full information on its antitrust suit against IBM, Bernard Goldstein, president of the Association for Data Processing Organizations (Adapso), said last week.

In a letter to Thomas Kauper, the newly appointed assistant attorney general in charge of the Antitrust Division, Goldstein requested a "personal review" of the case against IBM.

In particular, he attacked the portion of a pretrial order that restricts the Justice Department from disclosing any information on the case to members of the press.

"Undoubtedly as a result of this Order of Secrecy, the Department of Justice has abdicated the public information function which is a vital part of its responsibility," he said.

In order to overcome this secrecy surrounding the case, Goldstein further stated that Adapso would begin to inform the press and computer users of the issues in the case and when significant actions might take place.

"We shall regularly (at least biweekly) obtain copies of all documents we are permitted to inspect in the court docket; we shall regularly (at least biweekly) summarize developments" for interested parties, he said.

"We believe this function is yours," he added, "not ours. We know we cannot inevitably always be accurate in light of our limited information .... We assure you that we will immediately stop upon advice from you that the Court's Order of Secrecy has been lifted and that you are finally free to, and in fact intend to perform your ... responsibilities in this important matter."

The Order of Secrecy, Goldstein charged, "suppresses discussion by substantially every person in the computer industry, so that no really informed person ... can assume the public information function."

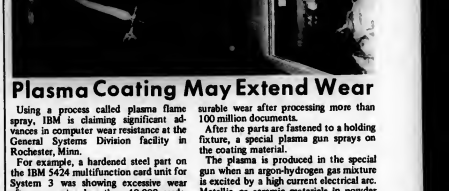
The order, he said, barred everyone "who has any responsibility for, or who are in any way involved in, the handling of this action, including all potential witnesses or consultants" from talking about the case.

He indicated this would involve almost anyone who was in the computer business, either as a supplier or user, from discussing the case.

Judge David Edelstein, he noted, who is handling the case, has indicated he would allow interested persons to comment on any proposed consent decree, but he asked how people would be able to comment without being supplied the necessary information on which any such decree was based.

"We believe," he said, "that responsible public reporting of the case in the news media is an essential ingredient to our preparation and indeed the preparation of others intensely interested in these matters."

"We have a crucial stake in the pending litigation," Goldstein concluded, "and are bound and determined to present our views to you, in the first instance with respect to both the expeditious progress of the case toward final adjudication and in connection with any disposition."



Plasma Coating May Extend Wear

Using a process called plasma flame spray, IBM is claiming significant advances in computer wear resistance at the General Systems Division facility in Rochester, Minn.

For example, a hardened steel part on the IBM 5424 multifunction card unit for System 3 was showing excessive wear after processing less than 40,000 cards.

After coating the part with chromium oxide, a ceramic material, via the plasma flame spray, no wear could be measured after processing 1.5 million cards.

A chrome-plated part for the IBM 1288 optical page reader was wearing significantly after a few million documents were processed. Again using the plasma flame spray process, there was no measurable wear after processing more than 100 million documents.

After the parts are fastened to a holding fixture, a special plasma gun sprays on the coating material.

The plasma is produced in the special gun when an argon-hydrogen gas mixture is excited by a high current electrical arc. Metallic or ceramic materials in powder form are then pressure fed into the plasma flame, and sprayed onto the parts at approximately 1,000 ft/sec.

Because the process develops temperatures within the spray gun up to 30,000° F, chilled water is forced through the gun to cool it. The sprayed parts, only inches away from the spray gun, remain at temperatures ranging from 200 to 400° F.

30% Japan Growth Seen

Special to Computerworld

SYDNEY, Australia — A look into the future development of the Japanese computer industry and the contributions of the Japanese Government was given to delegates at the recent fifth Australian Computer Conference by Kaoru Ando, managing director of Fujitsu Ltd. of Japan.

Ando said the Ministry for International Trade and Industry (Miti) forecast that by the end of March 1978 32,000 to 38,000 general-purpose computer systems would be installed in Japan with e total value of between $10.4 billion and $11.4 billion.

The average annual growth rate of new computer installations during the past five years was 39.7% and the rate for the next five years (1970 to 1975) will be about 30%, he said.

The total value of computers installed at the end of March 1976 would account for 2.5% of Japan's GNP.

The government will continue to give administrative guidance to key industries which vitally affect the welfare of the nation, he said.

Subsidies have been granted to computer manufacturers to encourage research and development. During the 1967-69 period, these subsidies amounted to $3.9 million.

"The computer industry is expected to become the technological core of the future development of these industries. Computers will play s vital role in all business and social systems," Ando said.

Higher-Speed Tape Drives to Close Tape/Disk Gap, MacGuire Predicts

By E. Drake Lundell Jr.
Of the CW Staff

LOUISVILLE, Colo. — The gap between tape and disk as storage media is narrowing as tape manufacturers move to higher-density tapes with higher speeds, according to James MacGuire, vice-president for marketing at Storage Technology Corp. (STC) here.

He also predicted the independent suppliers would have to begin offering equipment that was superior to IBM equipment if they wanted to be successful.

MacGuire indicated the tape media may be hindering faster growth in the area of high-speed and high-density tape equipment, at least at the present time.

STC Unit

Presently, he said, STC is offering a unit with a density of 3,200 bit/in. that has a 250 in./sec speed for a transfer rate of 800 kbyte. The 250 in./sec units have already been installed and the 3,200 bit/sec system will be in the field in the first quarter of 1973.

"Systems like this," he said, "are changing the tape/disk equation."

With the 3,200 bit/in. units, he added, one reel of tape can handle the entire contents of an IBM 3330-type disk drive and the tapes can be blocked so that the block size equals that of a track of 3330 data.

"In certain applications, therefore," he predicted, "a user could save a great deal of money by going to the high-performance tape units instead of to the 3330-like disk drives."

The independent tape manufacturers have a better chance of capturing a larger share of the IBM 3420-compatible tape drive market, he said, than they had in past markets since they began deliveries of the units at the same time IBM did.

But at the same time, MacGuire predicted the independents would have to offer technology that exceeded IBM's if they wanted to be successful in the long run.

Emphasize Performance

He said the independents should begin to deemphasize price in their marketing strategy and begin to emphasize performance of the units.

"At first, everyone's strategy was tied to underpricing IBM for approximately the same equipment," he said, "but now we have to offer better products and service."

Since it costs a great deal to develop better products and to offer better service, the independents will have to be priced higher than they have been in the past.

"But," he continued, "if the independents are smart they will not just copy the products from IBM."

In addition, MacGuire said that by offering products that are technically superior to those offered by IBM, the independents will force IBM into responding with better products, which will benefit the entire industry.

Complete Peripheral Line

MacGuire also indicated most of the independents that would survive actively in the computer business would be those with a complete line of peripheral products and not just specialized in one or two areas.

"The user doesn't want to have to deal with a great number of customer engineers," he said. "He would like to deal with only one or two – either all from IBM or the IBM man for the CPU and one independent for all of the peripheral equipment."

Storage Technology was moving toward the complete supplier concept, he noted, along with many of the other major firms in the independent peripherals marketplace.

The firm presently markets 3330-compatible disk systems manufactured by Information Storage Systems, an Itel subsidiary, and is working with Intel to develop 370-compatible memory that STC will market to the IBM marketplace.

In another area, MacGuire said the firm would like to see 50% of its business coming from the OEM side even though it has little OEM business st the present except for an agreement with Promodata in France which is essentially an OEM deal.

OEM business, he said, gives a firm immediate cash which helps in financing the leased end-user-business and the OEM volume also enables a firm to keep its manufacturing costs as low as possible.

IBM's Seal

One of the problems the independents will find when they offer products that are not copies of the IBM units is that users are sometimes wary of buying a product that does not have "the IBM seal of approval," he indicated.

The independents will have to educate the user as to the advantages and cost savings available with the technically advanced equipment, he concluded.

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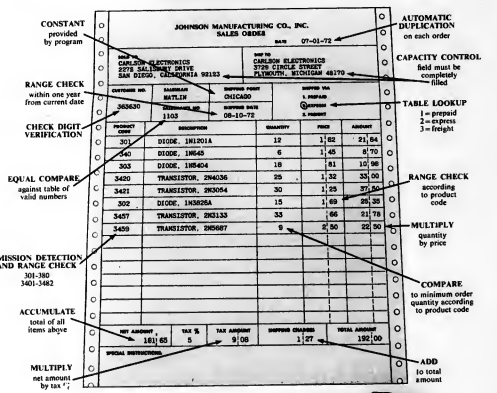

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Tablet Enhancement Eases Digitizing

SOUTHPORT, Conn. – For applications where combinations of graphic and alphanumeric (or symbolic) information must be digitized for processing or storage, Science Accessories Corp. has a series of standard "keyboards" which can be imprinted on the tablet of its Graf/Pen sonic digitizer.

By touching a selected character on the printed keyboard with the stylus, the operator generates the character. Then, the operator can associate the character with a specific location on the tablet by again touching the point on the tablet.

In addition to standard Ascii and Ebodic keyboards, Science Accessories said that almost any special keyboard requirement can be met with read-only-memory (ROM) techniques so that whole phrases or computer-instruction signals can be generated by touching the stylus to one point on the tablet.

Graf/Pan gets "keyboard."

New OEM Products

British System Sold Here

NEW YORK – A computer-based store-and-forward communications system, designed by its British subsidiary, Standard Telephone and Cables, Ltd., and sold here by ITT, is designed to send messages between up to 36 terminals at a speed of 6.67 char./sec.

Priced at under $100,000 in its basic configuration, the 600 ADX system combines rapid delivery and high traffic capacity.

Other New Products

Two 80-column card readers that photoelectrically read punched cards, pencil-marked cards or cards with both punched and pencil-marked data have been introduced by Bridge Data Products, Inc. Philadelphia.

The Model 8035 handles 300 card/min and sells for $2,115 in quantities of 100. The Model 8045 is rated at 450 card/min and sells for $2,265 in OEM quantities.

– – –

Microdata, Santa Ana, Calif., has designed a card reader system for its Micro 800 and Micro 1600 computers. It reads 80-column cards at up to 30 card/min; binary and Hollerith cards can be read continuously or on demand. Price is $4,100.

– – –

Digital Systems Services, Mountain View, Calif., is offering add-on core memory for the Hewlett-Packard 2114A/B minis. The DSS system is available in 4K, 8K and 12K, allowing for combinations up to 16K words. The memory costs $8,250 for 12K words.

– – –

The DD-6000 Series of disk memory drives from Western Dynex Corp., Phoenix, uses the IBM 5440-type cartridge and a fixed disk. It features an average access time of 35 msec. The single disk DD-6121 has a capacity of 25M bits. The dual disk DD-6221 has a capacity of 50M bits.

– – –

An 80-column card reader from True Data Corp., Newport Beach, Calif. that provides speeds of up to 1,000 card/min is being offered to OEMs for use with programmable terminals or high-speed line printers. Model 1000 OEM prices are $1,995 for single-unit and $1,735 for quantities of 100, with cabinet.

The R-50 60 char./sec, bidirectional paper tape reader from Data Specialities, Highland Park, Ill., uses a noiseless, wear-free stepping motor to advance the tape and starwheels.

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DP Industry 'Needs National Challenge,' Large Foreign Market to Spur Growth

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – Major technological advances have been made in the computer industry when national issues have provided a focal point and the subsidies necessary for such advancement.

But in the absence of any major national issues pushing for such development, the industry needs a large international market potential to spur development, according to the Department of Commerce.

"At present, the U.S. computer industry does not have a national issue to focus on," the department's Bureau of Domestic Commerce said in a recent statement.

"It is losing part of its market base and the technological gap which gave it superiority over foreign computer industries, if not already closed, is rapidly closing," the bureau stated.

"This is why the industry is making such a major point of elimination of direct foreign investment restrictions, elimination of export controls, better tax write-offs on international investments, etc." the bureau noted.

Export Licensing

The most important issue facing the industry in terms of international trade, in the opinion of the bureau, is the simplification and consolidation of export licensing procedures.

Second in importance is the elimination of Federal Direct Investment regulations, the bureau said, followed by more reliance on cooperative government industry groups to find solutions and approaches to problems rather than arbitrary government regulation.

In addition, the bureau said the industry needed the government to play a more active role in the sponsorship of international standards that affect the computer industry.

It also said the government should invest in such a way as to aid in broadening application areas in special sectors of the economy.

Increase Foreign Trade

The bureau also stated the government should "reexamine tax laws with the objective of increasing foreign trade" and to provide for tax relief for R&D expenditures on the basis of capitalization of equipment.

Other areas needed by the industry include "aggressive" government negotiations to equalize international tariffs and to eliminate non-tariff trade barriers, the organization indicated.

In addition, the organization said there was a need for the promulgation of "definitive antitrust" guidelines in order to assist the U.S. computer industry in its overseas dealings in combined efforts in the U.S. marketplace.

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Contracts

Datacraft Corp. has landed an $800,000 subcontract from Raytheon Co. for six DC 6024/3 computer systems for use in evaluation engineering and quality acceptance testing of the Army's SAM-D missile.

XLO Computer Products has received an order from Honeywell Inc. Marine Systems Center for 52 drum systems. The Model 185C512 Auto-Lift Data Storage Drum Systems will be part of the Honeywell Undergraduate Navigator Training System for the U.S. Air Force.

The National ATS/360 Support Group has received contracts to install software for use by the Department of Commerce, U.S. Navy/Ship Engineering Command and the Government Printing Office.

Dicom Industries has been awarded a contract by Fairchild Systems Technology for its Model 345 and 344 Digital Cassette Magnetic Tape Systems. The 345 will be used in the New Sentry Series of test equipment. The 344 is incorporated into the Fairchild 5000C and 600C Series of test equipment.

Burroughs Corp. has been awarded a contract by the Air Force to supply a B6700 system and terminals for installations at the Air Force Academy in Colorado.

Varian Data Machines has received a $1.3 million contract for a series of ruggedized R622/I systems from PRD Electronics, Syosset, N.Y. The R622/i is used in the Navy's Versatile Avionic Shop Test (Vast) system, which tests electronic equipment on carrier-based aircraft.

Computer Optical Systems, Inc. has signed a $1.2 million contract with World Market Centers, Inc. for design development of a point-of-sale register that uses a magnetically encoded card.

SYS Computer Corp. has received a contract from Hazeltine Corp. for SYS 500 microprocessor assemblies.

Homemakers Finance Service, Inc. and City Finance Co. have subscribed to the ITT Action System network.

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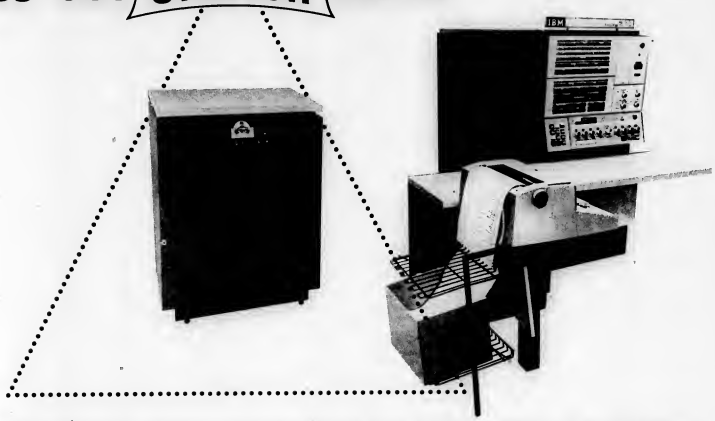

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Two Time-Sharing Firms Report Profits

Financial reports from two time-sharing firms confirm reports that the field is becoming profitable after years of hard times.

Time Share Corp., Hanover, N.H., earned $10,293, equal to around 1 cent per share, on revenues of $475,148 in the six months ended April 30.

Thase figures compare to earnings of $281 on revenues of $174,246 in the same six-month period a year earlier.

The firm made several acquisitions in the past year, including Interactive Learning Systems, Inc. and TSC Computer Ltd., which "added proprietary time-sharing packages to the company's library" and extended its base of equipment, according to Richard Bueschel, president.

In addition, the firm also acquired two time-sharing centers formerly operated by Consolidated Computer in Canada, before its financial woes forced it to drop out of the time-sharing business.

The firm continues to concentrate on specific application areas, Bueschel said, specifically the education sector which accounts for 50% of the firm's revenues, and the financial controls and manufacturing areas.

The other firm reporting a profit was On-Line Systems, Inc. in Pittsburgh, which had earnings of $141,966, or 29 cents per share, on revenues of $1.2 million for the quarter ended April 30.

In the like quarter a year ago, the firm showed income of $75,222, or 16 cents per share, on sales of $681,629. Last year's earnings in the quarter were boosted by an extraordinary item of 5 cents per share.

In the year ended April 30, the firm had earnings of $231,671, or 48 cents per share, on sales of $3.5 million.

A year ago, the firm earned $269,660, or 60 cents per share, on sales of $2.5 million.

Collins Radio Lands $1.3 Million Contract For Amcode Unit

DALLAS – Collins Radio Co. has received a $1.3 million contract from the American Stock Exchange (Amex) to supply a communications-oriented computer system for the initial stage of the new Amex trading system, Amcode.

Scheduled to be completed by the third quarter of 1972, the system will be a part of Amex's market data system which disseminates trade data.

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Rockwood Computer Corp.'s directors have approved a proposal to form a Delaware holding company, which would own all the stock of a Delaware operating corporation to which the company's business (including assets and liabilities) would be transfarred. Each stockholder would receive one share of the holding company, to be known as Rockwood National Corp., for aach share ownad. Application will be made to list the stock of the holding company on the Amarican Stock Exchange.

$$$

Aries Corp. announced that $2 million in financing for the US-A Partnarship composed of Aries and Urban Systems Development Corp. was closed June 12. The loan was made by the Urban Systems Mortgage Corp., a Westinghouse subsidiary.

$$$

Raytheon Co.'s board of directors has voted to authorize the purchase of up to 500,000 shares of the company's common stock to be held in its treasury. The shares will be purchased in individual off-market transactions from time to time. The acquired stock will be used primarily to offset dilution in earnings per share resulting from exercise of stock options and the conversion of preferred stock.

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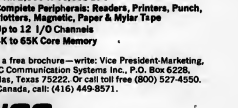

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EXCH		1972 RANGE (1)	CLOSE JUL 6 1972	WEEK NET CHNGE	WEEX PCT CHNGE
O	AOVANCEO COMP TECM	1- 2	1 1/4	0	0.0
A	APPLIEO OATA RES.	4- 7	4 3/8	+ 1/8	+2.9
O	APPLIEO LOGIC	1- 4	2 5/8	0	0.0
N	AUTOMATIC OATA PROC	72- 92	92 3/8	+3 3/8	+3.7
O	BRANOON APPLIED SYST	1- 2	1 1/4	- 1/8	-9.0
O	COMPUTER OIMENSIONS	8- 14	9 1/2	0	0.0
O	COMPUTER OYNAMICS	1- 4	1/4	-1	-80.0
O	COMPUTER NETWORK	4- 7	4 1/2	- 1/4	-5.2
N	COMPUTER SCIENCES	6- 10	6 1/2	- 1/8	-1.8
O	COMPUTER TECHNOLOGY	6- 8	5 1/2	0	0.0
O	COMPUTER USAOE	9- 14	9 3/4	+ 1/4	+2.6
O	COMP AUTOMOT REPORTS	5- 9	4 3/4	- 1/2	-9.5
N	COMPUTING & SOFTWARE	17- 28	18	+ 5/8	+3.5
O	COMRESS	1- 3	2	+ 1/4	+14.2
O	COMSHARE	5- 10	7	- 1/8	-1.7
O	OATATAB	5- 9	6	0	0.0
O	EOP RESOURCES	3- 8	3 3/4	+ 1/4	+7.1
A	ELECT COMP PROG	3- 5	2 3/4	0	0.0
N	ELECTRONIC OATA SYS.	43- 65	61 1/8	+2 5/8	+4.4
O	INFORMATICS	7- 11	7 3/8	- 1/8	-1.6
O	I.O.A. OATA CORP	1- 3	2 5/8	0	0.0
A	ITEL	8- 12	7 1/2	- 3/8	-4.7
O	KEANE ASSOCIATES	4- 7	4 3/4	+ 1/2	+11.7
O	XEYOATA CORP	7- 13	12 7/8	+ 1/8	+0.9
O	LOGICON	4- 9	6 7/8	0	0.0
A	MANAGEMENT OATA	6- 10	7	0	0.0
O	NATIONAL CSS INC	8- 25	21	+1 1/2	+7.6
P	ON LINE SYSTEMS INC	8- 20	19 5/8	+1 3/8	+7.5
N	PLANNING RESEARCH	11- 17	11 1/8	+ 1/8	+1.1
O	PROGRAMMING METHODS	20- 24	21 1/4	+ 7/8	+4.2
O	PROGRAMMING & SYS	1- 2	1 1/4	+ 1/4	+25.0
O	SCIENTIFIC COMPUTERS	3- 4	2 5/8	0	0.0
O	SIMPLICITY COMPUTER	1- 5	3 3/8	- 3/8	-10.0
O	TSS COMPUTER CENTERS	4- 6	5 5/8	0	0.0
O	TRACOR COMPUTING	2- 3	1 3/4	0	0.0
O	TYMSHARE INC	7- 10	8 1/4	0	0.0
O	UNITEO OATA CENTER	5- 8	6 1/2	- 1/2	-7.1
N	UNIVERSITY COMPUTING	18- 26	19 3/8	+1 1/8	+6.1
A	URS SYSTEMS	6- 10	8 1/2	+ 1/2	+6.2
O	VORTEX CORP	2- 5	2 1/4	0	0.0

PERIPHERALS & SUBSYSTEMS

EXCH		1972 RANGE (1)	CLOSE JUL 6 1972	WEEK NET CHNGE	WEEX PCT CHNGE
N	ADDRESSOGRAPH-MULT	34- 44	43 3/4	+1 3/4	+4.1
O	AOVANCED MEMORY SYS	12- 23	21 3/4	+2	+10.1
N	AMPEX CORP	7- 15	7 1/2	- 3/8	-4.7
O	ANOERSON JACOBSON	5- 8	5 3/8	+ 1/8	+2.3
O	ATLANTIC TECHNOLOGY	1- 11	3	- 1/4	-7.6
A	BOLT,BERANEK & NEW	5- 21	20 5/8	+ 3/8	+1.8
N	BUNKER-RAMO	9- 14	12 3/4	+1 1/8	+9.6
A	CALCOMP	17- 25	19 1/8	+1	+5.5
O	CENTRONICS OATA COMP	11- 53	47	0	0.0
O	COGNITRONICS	3- 5	4	+ 1/4	+6.6
O	COMPUTER COMMUN.	2- 7	3	+ 1/2	+20.0
A	COMPUTER EQUIPMENT	3- 4	3 1/8	+ 1/8	+4.1
O	COMPUTER MACHINERY	7- 13	11 5/8	+ 3/8	+3.3
A	COMPUTEST	5- 9	5 1/4	+ 1/4	+5.0
A	OATA PRODUCTS CORP	5- 7	4 3/4	0	0.0
O	OATA RECOGNITION	3- 5	2 3/4	0	0.0
O	OATA TECHNOLOGY	3- 5	3 5/8	- 1/8	-3.3
O	OI/AN CONTROLS	0- 8	5 5/8	+ 5/8	+12.5
O	OIGITRONICS	2- 4	2 1/4	0	0.0
N	ELECTRONIC M & M	5- 8	5 1/2	+ 1/2	+10.0
O	FABRI-TEK	2- 5	3 1/4	- 1/8	-3.7
O	GENERAL COMPUTER SYS	7- 16	13 1/2	+2	+17.3
N	GENERAL ELECTRIC	59- 70	66 3/4	+1	+1.5
N	MAZELTINE CORP	9- 13	10 1/8	+ 3/8	+3.8
O	INFOREX INC	28- 47	41 1/2	-2 1/2	-5.6
O	INFORMATION DISPLAYS	2- 5	2	- 1/4	-11.1
A	LUNDY ELECTRONICS	10- 14	10 1/4	- 1/2	-4.6
O	MANAGEMENT ASSIST	1- 2	3/4	0	0.0
N	MEMOREX	25- 38	26 5/8	+1	+3.9
A	MILGO ELECTRONICS	17- 44	40 1/4	+ 3/4	+1.8
N	MOHAWK OATA SCI	20- 27	20	+ 3/8	+1.9
O	OPTICAL SCANNING	7- 16	10 1/4	+ 3/4	+7.8
O	PERTEC CORP	9- 17	8 3/4	- 1/4	-2.7
O	PHOTON	7- 15	11 7/8	+ 1/8	+1.0
A	POTTER INSTRUMENT	13- 21	14 1/8	+1 1/2	+11.8
O	PRECISION INST.	7- 13	8 3/4	+ 1/4	+2.9
O	RECOGNITION EQUIP	8- 15	9 1/4	+1 3/8	+17.4
N	SANDERS ASSOCIATES	14- 21	14	- 1/4	-1.7
O	SCAN OATA	7- 13	8	+ 5/8	+8.4
O	STORAGE TECMNOLOGY	17- 39	36 1/2	+1 3/4	+5.0
O	SYCOR INC	7- 11	9 1/2	+ 3/4	+8.5
O	TALLY CORP.	8- 15	12 3/8	+ 5/8	+5.3
N	TEKTRONIX INC	34- 60	80	+4 1/8	+7.3
N	TELEX	9- 15	8 1/2	- 5/8	-6.8
O	WILTEX INC	10- 26	19	0	0.0

SUPPLIES & ACCESSORIES

EXCH		1972 RANGE (1)	CLOSE JUL 6 1972	WEEK NET CHNGE	WEEX PCT CHNGE
O	BALTIMORE BUS FORMS	6- 9	6 1/2	0	0.0
A	BARRY WRIGHT	9- 13	10 3/4	0	0.0
A	OATA OOCUMENTS	17- 28	21 3/8	+1 1/2	+7.5
O	OUPLEX PROOUCTS INC	9- 18	9 1/8	- 1/8	-1.3
N	ENNIS BUS. FORMS	7- 10	8 5/8	+ 1/4	+2.9
O	GRAHAM MAGNETICS	15- 27	18 1/2	+1	+5.7
O	GRAPHIC CONTROLS	12- 15	12 3/4	0	0.0
N	3M COMPANY	76-158	80 3/4	+4 1/8	+5.3
O	MOORE BUS. FORMS	42- 55	53 1/8	- 7/8	-1.8
N	NASHUA CORP	48- 56	52 7/8	+ 7/8	+1.6
O	REYNOLDS & REYNOLD	37- 77	39 3/4	+ 3/4	+1.9
O	STANDARO REGISTER	15- 20	15 3/8	+ 1/4	+1.6
O	TAB PROOUCTS CO	14- 17	15 1/4	+1	+7.0
N	UARCO	23- 28	24 3/8	- 5/8	-2.5
A	WABASM MAGNETICS	8- 11	8 3/4	- 1/2	-5.4
N	WALLACE BUS FORMS	22- 26	24 3/4	+2	+8.7

COMPUTER SYSTEMS

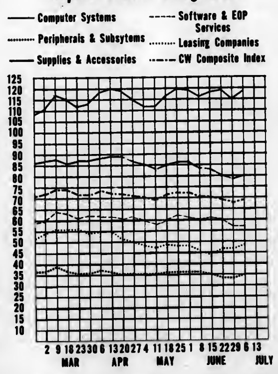
EXCH		1972 RANGE (1)	CLOSE JUL 6 1972	WEEK NET CHNGE	WEEX PCT CHNGE
N	BURROUGHS CORP	147-191	191	+8 5/8	+4.7
N	COLLINS RADIO	14- 20	14 1/4	+ 1/8	+0.8
N	CONTROL OATA CORP	43- 78	77 3/4	+4 3/4	+8.5
O	OATA OENERAL CORP	56- 99	99	+9	+10.0
O	OIGITAL COMP CONTROL	10- 25	12 1/4	- 1/4	-2.0
N	OIGITAL EQUIPMENT	72- 97	84 1/2	+4 5/8	+5.7
N	ELECTRONIC ASSOC.	6- 13	10 5/8	+ 3/8	+3.6
A	ELECTRONIC ENGINEER.	8- 14	7 3/4	- 1/4	-3.1
N	FOXBORO	28- 41	29	-7 1/2	-20.5
O	GENERAL AUTOMATION	13- 29	28 1/2	+ 1/2	+1.7
O	GRI COMPUTER CORP	3- 5	4 3/4	0	0.0
N	MEWLETT-PACKARD CO	46- 72	70 5/8	+2 1/8	+3.1
N	HONEYWELL INC	130-158	155 3/8	+6 7/8	+4.6
N	IBM	333-404	403 3/4	+12 1/4	+3.1
O	INTERDATA INC	8- 16	12 1/8	+1 1/8	+10.2
O	MICRODATA CORP	5- 10	9 1/4	+1 3/4	+23.3
N	NCR	29- 35	33	+1 7/8	+6.0
N	RAYTMEON CO	36- 47	37 1/4	+ 1/4	+0.6
N	SPERRY RANO	30- 44	43 1/8	+1 3/4	+4.2
A	SYSTEMS ENG. LABS	11- 16	12 1/8	0	0.0
N	VARIAN ASSOCIATES	14- 18	14 5/8	+ 5/8	+4.4
N	VICTOR COMPTOMETER	15- 24	20 1/8	+ 1/2	+2.5
N	WANG LABS.	35- 61	60	+2 1/2	+4.3
N	XEROX CORP	121-159	152 5/8	+3 3/8	+2.7

LEASING COMPANIES

EXCH		1972 RANGE (1)	CLOSE JUL 6 1972	WEEK NET CHNGE	WEEX PCT CHNGE
A	BOOTHE COMPUTER	7- 18	7 1/2	+ 1/2	+7.1
O	BRESNAHAN COMP.	2- 3	2 1/4	+ 1/8	+5.8
O	COMOISCO INC	3- 18	18	+3 1/4	+22.0
O	COMPUTER EXCHANGE	2- 3	1 3/4	0	0.0
A	COMPUTER INVSTRS GRP	8- 14	11 1/4	+ 7/8	+8.4
N	OPF INC	6- 13	6 1/4	0	0.0
M	OATRONIC RENTAL	3- 4	3 1/8	+ 1/4	+8.6
A	DCL INC	5- 10	6 3/8	+ 1/8	+2.0
A	OEARBORN-STORM	18- 26	20 1/2	+1	+5.1
A	OPA, INC.	5- 8	5 7/8	0	0.0
A	GRANITE MGT	7- 11	8 1/8	+ 1/2	+6.5
A	GREYHOUNO COMPUTER	7- 11	7 1/4	+ 1/4	+3.5
N	LEASCO CORP	18- 24	19 1/8	+ 3/4	+4.0
O	LEASPAC CORP	9- 15	8 3/4	- 1/2	-5.4
O	LECTRO MGT INC	2- 4	1 1/2	0	0.0
O	NCC INOUSTRIES	7- 11	7 5/8	+ 1/8	+1.6
A	ROCKWOOO COMPUTER	3- 7	3 1/8	- 1/4	-7.4
O	SYSTEMS CAPITAL	3- 20	19 7/8	+4 1/8	+26.1
N	U.S. LEASING	19- 33	30 1/4	+1 3/8	+4.7

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-SALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

APL
Three Months Ended March 31

	1972	1971
Shr Ernd	$.35	$.33
Revenua	37,239,200	33,129,837
Earnings	750,950	722,315
9 Mo Shr	1.29	1.21
Revenua	109,695,881	101,112,541
Earnings	2,745,199	2,587,002

BRESNAHAN COMPUTER
Three Months Ended March 31

	1972	1971
Shr Ernd	$.08	$.04
Revanue	1,466,000	1,308,000
Earnings	159,000	91,000
6 Mo Shr	.16	.06
Revenue	2,815,000	2,624,000
Earnings	309,000	123,000

COMPUTER DIMENSIONS
Three Months Ended March 31

	1972	1971
Shr Ernd	$.05	$.01
Revenue	2,659,396	1,965,509
aSpec Cred	35,000	16,000
Earnings	86,610	20,416

a-Tax loss carryforward.

DATA-DESIGN LABORATORIES
Nine Months Ended March 31

	1972	1971
Shr Ernd	$.25	$.01
Revenue	6,077,910	5,353,506
Loss Disc Op	.....	178,116
Tex Cred	62,000	.....
Earnings	273,875	7,954

DATASCAN
Yeer Ended Dec. 31

	1971	a1970
Shr Loss	$.26	$.44
Revenua	7,807,031	$,592,608
Loss Disc Op	317,747	413,748
Loss	91,935	155,620

a-Restatad.

DATRONIC RENTAL
Three Months Ended Merch 31

	1972	1971
Shr Ernd	$.04	$.06
Revenue	835,259	520,624
Earnings	24,840	39,566
9 Mo Shr	.20	.26
Revenue	2,432,949	2,366,078
Earnings	134,722	173,100

DATUM
Three Months Ended Merch 31

	1972	1971
Shr Ernd	$.04	$.01
Revenue	1,174,003	565,279
Earnings	47,784	5,184

SYKES DATATRONICS
Year Ended Fab. 29

	1972	1971
Revenue	$1,636,000	$956,000
Earnings	46,000	(762,000)

Editor's Note

To keep the Stock Trading Summary *representative* of the computer industry, it is necessary from time to time to drop some companies and to add others. Many factors are considered before changes are made, and readers should not assume the changes represent a censure of one company and an endorsement of another.

BREAKTHROUGH!

ITEL's unique new Packaged Lease Program may be the most significant announcement since the introduction of the 370.

Now there's a new way to lease an IBM System/370 from ITEL on a short term basis with complete flexibility and surprisingly large savings. The ITEL Packaged Lease Program lets you lease a complete computer package consisting of System/370, ITEL Disk Drives, ITEL Tape Drives and AMS Monolithic Memory.

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ITEL's Packaged Lease Program may be the most comprehensive leasing program ever offered. Just look at the advantages of this package: All equipment is from a single source, ITEL. You can upgrade from one model of 370 to another during the terms of the lease. You get advanced technology Disk Drives, Tape Drives and Monolithic Memory. And you get remarkably flexible lease terms.

ITEL has the unique capabilities required to make such a lease: financial resources and expertise. (ITEL has over $260 million in 360 and 370 leases in effect.) Monolithic Main Memory from Advanced Memory Systems, Inc. Disk Drives from our Information Storage Systems Division, which have set the industry standards for reliability. And now Tape Drives.

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Please provide me with more information on the Packaged Lease Program.

Name _____ Title _____

Company _____ Phone _____

Address _____

City _____ State _____ Zip _____

Present system _____